DOCUMENT RESUME

ED 262 155 CE 041 683

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TITLE Predicting Work Status Outcomes of Blind/Severely Visually Impaired Clients of State Rehabilitation Agencies. Technical Report.
INSTITUTION Mississippi State Univ., Mississippi State. Rehabilitation Research and Training Center on Blindness and Low Vision.
SPONS AGENCY National Inst. of Handicapped Research (ED), Washington, DC.
PUB DATE Jan 85
GRANT G008103981
NOTE 145p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Counselor Characteristics; *Employment Level; Employment Potential; Homemakers; Multiple Disabilities; *Outcomes of Education; *Participant Characteristics; Postsecondary Education; Prediction; *Predictor Variables; Program Effectiveness; Rehabilitation Counseling; Rehabilitation Programs; Retraining; Sheltered Workshops; *Visual Impairments; Vocational Education; Vocational Evaluation; *Vocational Rehabilitation

ABSTRACT

This study was designed to assist vocational rehabilitation agencies serving blind and visually impaired persons to identify client characteristics and agency factors and resources associated with the following four client employment outcomes: competitive employment, sheltered workshop employment, homemaking, and non-working. For the study, 469 cases with successful outcomes and 150 cases with unsuccessful outcomes were selected from files provided by the states of Florida, Kansas, Mississippi, and Ohio. Data were analyzed by discriminate analysis. The study found that membership in wage earner status outcome groups can be predicted using vocational rehabilitation process variables, personal variables that include biographical and visual disability related factors, financial and disincentive variables, occupational history factors, and environmental factors. Training and experience characteristics of the rehabilitation counselor were not found to contribute significantly to the prediction process. The study showed that these variables can be used to predict outcomes of rehabilitation with a correct classification rate of about 69 percent, a 272 percent increase over chance. Predictor variables can be used to predict client outcomes correctly and possibly influence course of treatment. (Each variable is analyzed in relation to the four employment outcomes.) (KC)

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ED262155

Predicting Work Status Outcomes of Blind/Severely Visually Impaired Clients of State Rehabilitation Agencies

TECHNICAL REPORT

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January 1985

CE 041 653

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Development of this document was supported by the Rehabilitation Research and Training Center Grant G008103981 from the National Institute for Handicapped Research, Department of Education, Washington, D.C. Opinions expressed in this document are not necessarily those of the granting agency.

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ACKNOWLEDGEMENTS

Four state rehabilitation agencies serving individuals who are blind or visually impaired deserve the highest praise from the rehabilitation research community for their cooperation, support, and efforts in this project. The staffs of these agencies exerted considerable effort to help the Center secure the data on which this study is based. For these efforts, the staffs of the Florida Division of Blind Services, Kansas Services for the Blind, Mississippi Vocational Rehabilitation for the Blind, and Ohio Bureau of Services for the Visually Impaired merit the admiration and gratitude of the blindness and low vision research community.

Special gratitude must be expressed to the following individuals whose leadership and understanding of rehabilitation research needs in the field of blindness and low vision was critical to the success of this project.

Mr. Donald H. Wedewer, Director, Florida Division of Blind Services
Mr. Carl McCoy, VR Program Director, Florida Division of Blind Services

Mr. Gabriel R. Faimon, former Director, Kansas Division of Vocational Rehabilitation
Dr. Richard A. Shutz, Director, Kansas Services for the Blind
Ms. Suzanna Erhart, VR Supervisor, Kansas Services for the Blind

Dr. J. Elton Moore, Director, Mississippi Vocational Rehabilitation for the Blind
Mr. Jim L. Carballo, former Director, Mississippi Vocational Rehabilitation for the Blind

Mr. Cooper Sontag, former Administrator, Ohio Rehabilitation Services Commission
Ms. Doris Barcomb, Head, Ohio Bureau of Services for the Visually Impaired
Mr. Charles Z. Nichols, Program Specialist, Ohio Bureau of Services for the Visually Impaired

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INTRODUCTION

Unemployment and underemployment of blind and visually impaired people is an issue of considerable concern to the blindness field. The employment problems of blind people are a central concern of administrators of state rehabilitation agencies serving blind people. Reduction of the unemployment and underemployment problems of the blind persons served by a rehabilitation agency frequently requires that the agency administrator examine services in terms of their contribution to the outcome of the rehabilitation process. Often rehabilitation administrators have lacked sufficient information about the contributions of different rehabilitation services to case outcome to enable allocation or reallocation of agency resources on the basis of the potential for these resources to reduce the unemployment problem of the agency's clients.

Administrators of rehabilitation agencies have lacked the necessary information on which to base resource allocation decisions because there has been relatively little outcome research focusing on blind and severely visually impaired clients of state rehabilitation agencies (Giesen, Graves, Machalow, Schmitt, & Dietz, 1984; Giesen & Graves, 1984; Schmitt, 1984). Much of the existing literature deals with non-vocational adjustment to blindness (Ammons, 1978), restricts itself to a population of blind persons in a specific geographic region (Knowles, 1969) or a single state agency (Crouse, 1974), or describes employed blind persons (Bauman & Yoder, 1963; Bauman & Yoder, 1964).

Agency administrators have been hampered further in their resource allocation decisions by investigations which examined rehabilitation outcome in the "successful or status 26" versus "unsuccessful or status 28" classification system. As Kirchner and Peterson (1982) illustrated, the successful or status 26 category contains at least three subgroups, that is, persons closed as com-

petitively employed, homemakers, and sheltered workshop employees, each with unique characteristics and case service needs. If the agency's goal is to reduce the underemployment and unemployment problems of its blind and visually impaired clients through competitive employment closures, the agency administrator will need to know which rehabilitation services contribute to which client outcomes, including those which are not competitive employment closures. Outcomes should, therefore, be examined in terms of more specific outcome categories, as Dunn (1975) argued, so that more accurate estimations of client benefits from the delivery of rehabilitation services can be made.

The outcome classification system that is employed should be practical in terms of both interpretation and prediction methodology. Dunn's list of functional outcomes (1975) is too extensive from the standpoint of prediction methodology to be practical. Additionally, the outcome criteria system should address closure issues of concern to these administrators such as allocating resources for improving the agency's competitive employment closure rate, identifying service needs of persons closed in sheltered employment, and examining service delivery issues and client characteristics of persons closed as homemakers.

Summary of Outcome Research Literature

Overview

An extensive body of literature exists relating various elements of the rehabilitation process to client outcomes. The purpose of most client outcome studies has been to identify those client characteristics that are related to rehabilitation outcome (Bolton, Butler, & Wright, 1968). Outcome studies have been cited as the first step toward providing individualized service programs

(Bolton, 1972b).

While numerous predictive outcome studies have been conducted over the years, it is difficult to compare the majority of these studies because they were carried out in specific geographic locations, focused on selected or mixed disability groups, utilized different criteria for success, or employed different data collection techniques or statistical procedures. To improve the state-of-the-art of predicting rehabilitation outcomes, Bolton (1979) has recommended that no mixed disability groups be employed in the same study and that multivariate analyses be used in outcome research. The present study conforms to these recommendations.

Predictive and Descriptive Outcome Studies Specific to Blindness

There have been relatively few studies attempting to predict rehabilitation outcome of legally blind clients of state rehabilitation agencies. Several of these studies have described the personal characteristics of the successful blind rehabilitant. Other studies have dealt with a segment of the blind population such as war blinded or predicted non-vocational outcomes such as adjustment to blindness or ability for independent living. These studies have been summarized to identify variables potentially indicative of the employment outcome of blind and severely visually impaired clients.

Bauman and Yoder (1963) surveyed 408 legally blind persons employed in 14 occupations. Over fifty percent of the subjects were totally blind, and less than fourteen percent had any useful residual vision. The most common traits possessed by these successful professionals were good mobility skills, above average written and spoken communication skills, good memory, pleasant appearance and adequate self-confidence. Bauman and Yoder (1964) also investigated the characteristics of over 700 clerical, industrial, and service

employees. The typical blind worker in those occupations was a male between 35 and 45 years of age, had some travel vision, traveled independently using a cane, was usually a high school graduate, was married with children, produced on an equal level with sighted workers, obtained employment through a state agency for the blind, was trained on the job by his employer, was satisfied with services received, had no major health problems, and believed that persistence, self-confidence, and hard work were the keys to success.

Scholl, Bauman, and Crissey (1969) reported factors which contributed to the vocational success of visually handicapped clients. The study used 16 personal variables collected for 644 subjects from five states. Vocational success was defined in terms of three criterion variables; they included percentage of time worked, income, and a socio-economic index for occupations. The best predictors for percentage of time worked were IQ, sex, travel ability, educational level, and other disabilities. The best predictor variables for income were IQ, sex, functional vision, marital status, educational level, and other disabilities. For the occupational socio-economic index, IQ, sex, educational level, money spent, travel ability, and other disabilities were the best predictor variables. Intelligence, sex, education, and disabilities other than blindness were the predictor variables common to all three outcome criteria. Descriptive data also revealed that the clients were employed in a limited range of occupations, with more than fifty percent of the men employed in thirteen occupations and fifty percent of the women employed in only nine occupations.

Knowles (1969) employed three levels of inferential statistics to study successful and unsuccessful vocational rehabilitation of 461 legally blind clients. The sample contained 245 successful rehabilitants and 216 clients closed unsuccessfully. The only variables found significant in all three analy-

ses were mobility and orientation training and vocational classification before rehabilitation. Three other highly significant discriminators between the success and non-success groups were age blindness occurred, years of blindness, and age at rehabilitation.

Personal and program service characteristics were investigated by Crouse (1974) to determine predictors of rehabilitation outcome for legally blind clients of a state rehabilitation agency. The personal characteristic variables of age, sex, race, marital status, number of dependents, and educational level were not as useful as the program service characteristics in predicting rehabilitation success. Within the group of program service variables, personal adjustment services and physical restoration services proved to be the most useful predictors of successful outcome.

Kirchner and Peterson (1982) described three outcome groups of legally blind and otherwise visually impaired persons closed in the 1980 fiscal year by state-federal vocational rehabilitation agencies. Kirchner and Peterson divided the status 26 closures into competitive employment, sheltered workshop, and homemaker groups. Those clients closed in competitive employment were generally the least severely visually impaired, had no second disabling condition, were slightly more likely to be male, were under 36 years old, were either never married or currently married, had at least a twelfth-grade education, were primarily white, received neither SSI or SSDI, and were either not working or were competitively employed at referral. The vast majority of sheltered workshop closures were the most severely visually impaired, and considerably more than half had a second disabling condition. They were slightly more likely to be male; were between 25 and 54 years old; were never married; had a ninth-grade education or less; were white, with over a quarter of the group being

black; three-quarters were recipients of SSI, SSDI, or both; and the majority were not working at the time of referral. Half the homemaker closures were legally blind with the other half being visually impaired. Just over half had a second disabling condition and over three-quarters of the group were female. The homemakers were generally over 54 years old, currently married or widowed, had less than a twelfth-grade education, were white, were either homemakers or not working at the time of referral, and two-thirds received no benefits, while one-third were recipients of either SSI or SSDI.

The Kirchner and Peterson (1982) analyses are limited by two major factors. Their analyses of the R-300 tape were restricted to cases closed in RSA status 26 in a single fiscal year. It must be noted, however, that the analyses subdivide the 26 closure population into the three categories and provide a significant and unique analysis of rehabilitation outcome data which addresses issues of considerable interest to the blindness field. Omitting cases closed in status 28 from the analyses, however, does restrict the number of implications which can be drawn by rehabilitation administrators. The second limitation is that the R-300 data base does not contain information which previous research has shown to be related to the outcome of services provided blind persons. For example, Scholl, et al (1969) and Knowles (1969) found that blind persons who received orientation and mobility training were more likely to have successful rehabilitation outcomes. Age at onset of blindness (Knowles, 1969) was reported to be predictive of outcome as well. Neither of these two variables was available to Kirchner and Peterson in their examination of the FY 1980 vocational rehabilitation placements of blind and visually impaired clients.

Additional Potential Predictors of Rehabilitation Outcome

No studies identifying variables related to outcome were found which exa-

mined the influence of the labor market, that is, unemployment rate, on employment outcome for blind clients of the state rehabilitation system. Levitan and Taggart (1977) state that "the disabled are disproportionately affected by labor market changes... In bad times, those who become disabled are the most expendable workers, and disabled job seekers lose out in competition with others who are sounder in mind or body" (p. 23). This study, therefore, examined the contribution of labor market conditions to the prediction of employment outcome, specifically the county or Standard Metropolitan Statistical Area (SMSA) unemployment rate of the client 60 days prior to case closure.

Attempts have not been made to assess the impact of the proximity of rehabilitation facilities, rehabilitation counseling services, and protected employment for blind/severely visually impaired persons on the outcome of the rehabilitation process. Crouse (1974) found the utilization of a facility in a rehabilitation case to be positively related to a successful closure. However, proximity as such has not been investigated in a systematic manner.

While the contributions of education to the prediction of rehabilitation outcome (Scholl et al., 1969) have been examined in prior research, the contribution of a closely related factor, the blind client's occupational history, has not been systematically studied. A considerable body of literature (e.g., "New Study Affirms", 1983) indicates that the briefer the period of unemployment prior to referral for rehabilitation services, the greater the likelihood of competitive employment outcome. Other occupational factors such as difficulty level of the job held by the blind person prior to the provision of rehabilitation services have not been investigated.

Other variables not investigated in prior outcome studies examined in the current study included utilization of optical and non-optical aids, low vision

aid training services, IWRP vocational goal levels, number of changes in IWRP vocational goals, and case services expenditure data.

Conclusions

Currently available rehabilitation outcome research literature suggests a number of factors which are related to successful rehabilitation outcome or status 26 closure. A limited number of these studies examine the outcome of the rehabilitation process for legally blind clients of state rehabilitation agencies. Those studies which address the visually impaired population do not, however, focus on predicting specific employment outcomes of the rehabilitation process. Therefore, there is a lack of information for administrators of rehabilitation agencies to use in allocating agency resources to reduce the unemployment and underemployment problems of the agency s blind and visually impaired clients.

Purpose of Study

The present study was designed to assist vocational rehabilitation agencies serving blind and visually impaired persons to identify client characteristics and agency factors and resources associated with four client employment outcomes. It was also intended to fill gaps in the rehabilitation literature regarding the employment outcomes of the rehabilitation process for blind clients of state rehabilitation agencies. The four employment outcomes are competitive employment closures, sheltered workshop employment closures, homemaker closures, and non-working closures. The categories of variables used to predict client employment status outcome include personal, financial, occupational, rehabilitation process, counselor, and environmental variables.

The study was designed to achieve the following objectives:

1. To identify those variables associated with the rehabilitation service delivery system process that predict employment outcomes.
2. To identify those variables or characteristics of the client, including those related to disability and to personal/biographical characteristics that predict specific employment outcomes.
3. To identify those variables related to the financial status of the client that predict employment outcomes.
4. To identify those variables related to the occupational history of the client that are predictive of employment outcomes.
5. To identify variables related to the rehabilitation counselor that predict employment outcomes.
6. To identify environmental variables that predict employment outcomes.

METHOD

Subjects

The sample. The states of Florida, Kansas, Mississippi, and Ohio were selected for the study. Casefiles of individuals closed in rehabilitation status 26 (successful) and status 28 (unsuccessful) during federal fiscal years 1978 through 1980 (10/1/77 to 9/30/80) served as the population from which the cases were selected. Not all clients of agencies for the blind were eligible; only individuals classified as at least legally blind were included in the accessible population.

Selection of states. The selection of states was determined by several criteria and constraints. The states were strategically chosen to obtain a rural/urban representation, varied national geographic representation, type of state agency structural representation, and state population size representation. Also, the selection of the states had to be made within the fiscal constraints of the budget of the Rehabilitation Research and Training Center. The state agency had to be willing to participate in the research project. Florida and Ohio represented states with large urban populations while Mississippi and Kansas represented states with substantial rural populations. Geographically, Florida provided a heterogeneous Sunbelt state, Kansas provided a Central Plains state, Mississippi represented a state in the deep South, and Ohio represented an industrial Midwestern state.

Each of the four states was able to generate lists of all cases closed in the fiscal years 1978 through 1980. The systematic sampling procedure called for selecting every 17th casefile to ensure that the sampling would be distributed across the entire master list of each state. The value of 17 was determined by taking the total number of status 26 and 28 closures in any year in the

entire state population and dividing this number by the total status 26 and 28 sample quota in the year. For example, Florida's sampling rate was determined by adding the 596 status 26 cases and the 250 status 28 cases for one year in the accessible population and dividing the resulting total of 846 by the total of 35 status 26 cases and 15 status 28 cases, or 50 cases.

Once a casefile was selected, it was examined to ensure that it met the criterion for inclusion in the research sample, that is, had a primary RSA disability code of 100-119. If the criterion was not met, the next case was examined to determine if it met the criterion. If so, it was designated as part of the sample. This procedure was repeated until the quotas for each closure status and each year were satisfied.

It was anticipated that some of the casefiles selected for the sample would not be obtainable, would not be sufficiently complete, or would be unsuitable for sampling for other reasons. To allow for this probability, a 25% increase was added to the original estimated sample size of 567. Table 1 shows the number of status 26 and status 28 cases in the final obtained sample. The table also shows the percentages reflecting the proportional representation of each state in the sample and the percentages attained in the sample.

Table 1

Sample size and proportions

State	Number			%
	"26"	"28"	Total	
Florida	99	47	146	24
Kansas	30	12	42	7
Mississippi	108	16	124	20
Ohio	232	75	307	50
Total	469	150	619	101*

Note: Percent exceeds 100% due to rounding.

Data collection

The Functional Outcomes Coding Form. Before data collection, a Functional Outcomes Coding Form (See Appendix A) was developed for use by the data collectors. Based on the literature review, studies of R-300 data, casefile reviews, and identification of previously unexplored variables, 136 specific items of information (variables) were included in the coding form. This coding form served to define the variables to be abstracted from the casefiles by the data collection team. It was designed to provide an organized guide and a convenient format for data collectors, as well as to serve as a data entry form, from which the information could be systematically entered into computer data files.

A large portion of the coding form was designed for recording data from the R-300 form. Seventy-one "R" variables were obtained from the R-300 form or a modified version of the form used by the state. Five additional variables were included at the end of the coding form. These were designated as "R" variables

because they were alternative codes for the disabilities provided on the R-300 and in medical records in the casefile.

Examination of the casefile information provided 32 "C" variables including specific information on type and number of additional eye disabilities, type and number of other (non-eye) disabilities, receipt of mobility training, use of adaptive aids, ability and achievement test scores, occupational history information, job titles, Dictionary of Occupational Titles (DOT) codes (U.S. Department of Labor, 1977), locations and addresses of counselor and service facilities, and counselor demographic information, including training and experience. Several variables appearing on the coding form in this section and in other locations were alternate codings of other variables. For example, each job title was coded by its DOT code and assigned a job difficulty index number, the Total Vocational Quotient (TVQ) (McCroskey, 1980). The DOT code was useful for descriptive purposes while the TVQ index permitted inclusion of employment information in quantitative analysis. The third section of the coding form was designed for coding up to 28 case service expenditure ("E") totals.

The casefiles for Mississippi were abstracted at the RTC by three data collection specialists. Data collection for the other three states was carried out by the data collection team and took place at the state agency for that state.

Descriptive Division of Variables

A technical data appendix listing variables that can appropriately be described by computation of means and standard deviations is available from Rehabilitation Research and Training Center in Blindness and Low Vision. The appendix also includes the variables that can be described best in categorical tables showing frequency and percent.

Variable Lists

The complete list of variables considered in the present investigation is contained in Appendix B. For data analyses purposes, it was sometimes necessary to recode or compute new variables from the basic (or "original") data. Variables which were derived by computing, recoding, or logical relationships with the original variables are indicated by placement of the variable name under the "Derived" column and indentation of the variable label. For example, R6, Referral Source, provided categorized information on sources of referral. Five new indicator variables (R6A, R6B, R6C, R6D, R6E) were computed from Referral Source. R6A indicated whether or not the client was referred by an individual; R6B, referred by educational institution; and so on. Thus, in general, a derived variable under an original variable represents a recoding of that variable for analysis or display purposes.

Shown at the end of Appendix B are six special derived variables. NOCC, Number of Occupations, is the number of jobs held by the client prior to referral and may range from 0 to 3. NDIS, Number of Disabilities in Addition to Blindness, counts the second and third disabilities and may range from 0 to 2. NEDIS, Number of Eye Disabilities, is the number of eye disorders identified by medical examination and may range from 1 to 3. TOTDIS, Total Number of Disabilities, is the sum of NDIS and NEDIS. YDPR, Years Disabled Prior to Referral, is the time from onset of blindness to referral. IPE, Index of Previous Employment, combines how long the client worked at his/her previous job and the skill level of that job reflected by the the TVQ score. IPE is the product of the job duration multiplied by the TVQ score summed over each previous job. Thus, the IPE incorporates job duration and job difficulty in a single variable.

The list of all variables was subdivided into several other lists with two purposes in mind: (1) to provide complete descriptive information on all variables and (2) to identify variables that may be predictors of outcome ("independent" variables) and variables which are themselves descriptors of outcome (potential "dependent" variables). Since these are two ways to divide the list of all variables, lists under one method of division may not be mutually exclusive of lists under the other method of division.

Analytic division of all variables. The list of all variables was subdivided into a list of potential predictors of outcome, a list of variables descriptive of outcome, and other variables, such as multi-category variables, not appropriate for use as analytic predictors. Table 2 shows the list of outcome variables. These variables were excluded as possible predictors of outcome since they were descriptive of outcome and were not known until closure.

Table 3 provides the list of potential predictor variables. This list includes original variables which were quantitative in nature, such as Age at Referral (R7), and indicator variables, such as Currently Married (R23A). These variables were all appropriately coded for input as predictors in the discriminate analysis. Complete data for all or nearly all of the 619 cases were not available for several of these variables, such as Total Monthly Family Income at Referral (R29). These variables with substantial missing data are indicated with a "*" by the variable name and were excluded from the list of candidate predictors when the list was entered into the discriminate analysis.

Variables not on the list of candidate predictors or on the list of outcome variables were not displayed in a specific table but were included in the list of categorical tables in a technical data appendix.

Table 2

List of Outcome Variables

Variable Name		Variable Label
Original	Derived	
R44		SSDI Status at Closure
R45		SSI Status at Closure
	R45A	SSI at Closure
R46		Work Status at Closure
	R46B	Work Status Wage Earner Groups
R47		Weekly Earnings at Closure
R49		Public Assistance in Dollars at Closure
R51		Occupation at Closure TVQ
R56		Outcome of Extended Evaluation or Vocational Rehabilitation Services
R57		Reason Not Rehabilitated
	R57B	Not Rehabilitated Due to Other
	R57C	Not Rehabilitated Due to Too Severe Disability
	R57D	Not Rehabilitated Due to Death

Table 3

List of Candidate Predictors

Variable Name	Variable Label
R6A	Referred by Individual
R6B	Referred by Educational Institution
R6C	Referred by Health Facilities
R6D	Referred by Welfare and Other
R6E	Referred by Private Organizations
R7	Age at Referral
R9A	Gender
R11A	SSDI Received at Referral
R12A	SSI at Referral
R13A	White/Non-White
R15	Months in Statuses 00-02
R16	Spanish Surname
R17	Referral Outcome - Extended Evaluation
R21A	Months Since Previous Successful Closure
R21B	Months Since Previous Unsuccesssful Closure
R23A	Currently Married
R24	Number of Dependents
R25	Total Number in Family
R26	Highest Grade Completed
R27B	Wage Earner Group at Referral
R28	Weekly Earnings at Referral
R29*	Total Monthly Family Income at Referral
R31	Public Assistance Monthly Amount at Referral
R32	Time on Public Assistance at Referral
R33B	Primary Support at Referral = Family-Friend
R33C	Primary Support at Referral = Transfer Payments
R33D	Primary Support at Referral = Other Sources
R36A	Referred by Social Security Administration
R37A	Social Security Recipient at Referral
R39	All Services - Total
R40	Rehabilitation Facilities - Total
R41	Social Security Trust Fund - Total
R42	Supplemental Security Income Fund - Total
R52	Number of Months in Extended Evaluation
R53	Number of Months from Acceptance to Closure
R54	Number of Months in Training
R55	Number of Months Ready or in Employment
R58	Received Diagnostic Services

R59	Received Restoration Services
R60A	Received Institutional Training
R64A	Received Non-Institutional Training
R65	Received Personal and Vocational Adjustment Training
R67	Received Maintenance
R68	Received Other Services
R69	Received Services to Other Family Members
C1	Received SSDI During Service
C2	Age at Onset of Blindness
C3	Visual Efficiency Percent Loss
C4	Mobility Training
C5A	Used Optical Aid
C5B	Used Non-optical Aid
C5C	Used Both Optical and Non-optical Aids
C6	Low Vision Aid Training
C7A	Number of Types of Medications/ Treatments Prescribed
C8*	IQ Measures
C9*	Achievement WRAT Reading Level
C91*	Achievement WRAT Spelling Level
C92*	Achievement WRAT Arithmetic Level
C11	Occupational Goal TVQ at First IWRP
C12	Number of Changes in Occupational Goal
C14	Previous Occupation 1 TVQ
C15	Time from Previous Occupation to Referral
C16	Previous Occupation First Time
C171*	Previous Occupation 2 TVQ
C18	Previous Occupation Second Time
C191*	Previous Occupation 3 TVQ
C20	Previous Occupation Third Time
C22	Proximity to Nearest Vocational Rehabilitation Training Facility (miles)
C24	Proximity to Nearest Sheltered Employment
C26	Proximity to Vocational Rehabilitation Counselor (miles)
C27	Unemployment Rate County of Residence 2 Months Prior to Closure
C28	Counselor of Closure Years of Experience
C29	Counselor Training Index
E10	Expenditure for Diagnostic Evaluation
E21	Expenditure for Surgery/Treatment
E21A	Expenditure Sum of Surgery/ Treatment Plus Other Physical Restoration
E22	Expenditure for Prostheses
E23	Expenditure for Hospital/Convalescence

E24	Expenditure for Physical Restoration - Other Physical
E31	Expenditure for Academic Training College
E31A	Expenditure Sum of Instruction and Training (E31 + E32 + E33 + E34 + E37)
E32	Expenditure for High School/Elementary School
E33	Expenditure for Business Training
E34	Expenditure for Trade School
E35	Expenditure for On-the-Job Training
E35A	Expenditure for On-the-Job Training and Miscellaneous Training
E36	Expenditures for PAT/VAT
E37	Expenditure for Technical Associate Degree
E38	Expenditure for Miscellaneous Training
E40	Expenditure for Maintenance
E50	Expenditure for Service to Family
E90	Expenditure for Other Services
E91	Expenditure for Travel/Transportation
E92	Expenditure for Reader Services
E93	Other Expenditures Total
NOCC	Number of Occupations
NDIS	Number of Additional Disabilities to Blindness
NEDIS	Number of Eye Disabilities
TOTDIS	Total Number of Disabilities
YDPR	Years Disabled Prior to Referral
IPE	Index of Previous Employment

NOTE: "*" indicates the variable was not entered into the analysis due to incomplete data.

RESULTS

The results of the investigation are presented in terms of an explanation of the work status outcome groups, the discriminant function analysis, and descriptive data for each of the outcome groups.

Work Status Outcome Groups

Definitions

The outcome groups were derived from analyses of a sample of 619 status 26 and 28 closures of totally blind (RSA disability codes 100-109) and legally blind (RSA disability codes 110-119) clients of state rehabilitation agencies in Florida, Kansas, Mississippi, and Ohio. Using wages earned and employment setting at case closure as criteria, four work status at closure groups were established.

The four work status groups were Wage Earner 1 (WE-1), Wage Earner 2 (WE-2), Non-Wage Earner 1 (NWE-1), and Non-Wage Earner 2 (NWE-2). The WE-1 group consisted of those employment outcomes for which wages were earned in non-sheltered settings. The outcome categories for the WE-1 group were competitive labor market, self-employed (except BEP), and state agency managed Business Enterprise Program. The WE-2 group were employed in protected work settings. The WE-2 group outcome categories included sheltered workshop and homebound industry closures. The NW-1 group outcome categories were homemaker and unpaid family worker. The NW-2 group consisted of status 28 closures with outcome categories Not working - student, Not working - other, and Trainee or worker (non-competitive labor market). This classification system is based on the nine group coding system used in the RSA manual for reporting vocational rehabilitation client work status at closure. While the nine group system pro-

vides more information about the outcome of the vocational rehabilitation process than the four Wage Earner categories system of the present study, it is too cumbersome to facilitate prediction and interpretation of the results. The Wage Earner categories were assigned an index of 1 through 4, which reflects the mean weekly earnings or equivalent at closure. This index, therefore, permits quantitative analysis of the dependent variable work status at closure.

For convenience, the Wage Earner groups will be referred to in the tables and in the remainder of this paper in the following manner:

Wage Earner	1 (WE-1)	= Group 1 = "Competitive" group
Wage Earner	2 (WE-2)	= Group 2 = "Sheltered" group
Non-Wage Earner	1 (NW-1)	= Group 3 = "Homemaker" group
Non-Wage Earner	2 (NW-2)	= Group 4 = "Unemployed" group

The sample of status 26 and 28 cases was divided between the two RSA categories, with 469 (75.8%) of the cases closed in status 26 and 150 (24.2%) of the cases closed in status 28. In Table 4 is displayed the distribution of the sample across the Wage Earner categories.

In Table 5 are displayed the 10 work status closures. The tenth, homebound industry, was added to differentiate between self-employed, homebound, and sheltered workshop outcome status. In the Wage Earner 1 group, 167 (82.7%) persons were closed in competitive employment, 23 (11.4%) were closed as self-employed, and 12 (5.9%) were closed in the BEP status. In the Wage Earner 2 group, 50 (79.4%) persons were closed in sheltered employment and 13 (20.6%) were closed in a homebound industry. In the Non-Wage Earner 1 group, 197 (96.6%) persons were closed as homemakers and 7 (3.4%) cases were closed as unpaid family workers. The unemployed group had 144 (96%) Not working closures; 5 (3.3%), Not working - student closures; and 1 (.7%) Trainee, closure.

Table 4

Distribution of Sample Across Wage Earner Categories.

Group	N	%
Wage Earner 1	202	32.6
Wage Earner 2	63	10.2
Non-Wage Earner 1	204	33.0
Non-Wage Earner 2	150	24.2
Total	619	100.0

Sample Comparison with RSA Population Data

For FY 80, Kirchner and Peterson (1982) reported that over 31,000 persons whose primary disabling condition was vision loss were closed as rehabilitated by agencies of the state-federal system of vocational rehabilitation. Of the over 31,000 persons, 12,631 were classified at referral as blind or having a visual impairment of such severity to be classified as legally blind. In the current study, 214 cases from this population during the same fiscal year were sampled. The sample of the current study represents 1.7 percent of the total population for FY 80.

To determine if the 1.7 percent sample used in the current study compared with the national average for 12,631 cases regarding the percent of cases closed in each of the wage earner status outcome groups, data were abstracted from the Kirchner and Peterson report (1982). In Table 6, it can be seen that for FY 80 the sample is similar to the national average in terms of cases closed in each of the four outcome groups. It should be noted that if the groups 1, 2, and 3

Table 5

Work Status at Closure

Work Status at Closure	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Wage Competitive	167	82.7	0	0.0	0	0.0	0	0.0	167	27.0
Wage Sheltered	0	0.0	50	79.4	0	0.0	0	0.0	50	8.1
Self-Employed	23	11.4	0	0.0	0	0.0	0	0.0	23	3.7
BEP State	12	5.9	0	0.0	0	0.0	0	0.0	12	1.9
Homemaker	0	0.0	0	0.0	197	96.6	0	0.0	197	31.8
Unpaid Family Worker	0	0.0	0	0.0	7	3.4	0	0.0	7	1.1
Not Working-Student	0	0.0	0	0.0	0	0.0	5	3.3	5	0.8
Not Working-Other	0	0.0	0	0.0	0	0.0	144	96.0	144	23.3
Trainee	0	0.0	0	0.0	0	0.0	1	0.7	1	0.2
Homebound Industry	0	0.0	13	20.6	0	0.0	0	0.0	13	2.1
Total	202	100	63	100	204	100	150	100	619	100

were collapsed into the traditional 26 category, the sample is almost identical to the FY 80 overall average. The sample has slightly more Wage Earner 1 and Wage Earner 2 cases and fewer Non-Wage Earner 1 cases. Therefore, the 214 cases and their outcomes closely resemble the total population of blind and legally blind cases closed in FY 80. Since the same sampling procedure was used for FY 78 and FY 79, it may be inferred that the whole sample of 619 accurately represents the population served by state rehabilitation agencies for the three fiscal years sampled.

Table 6.

Study Sample and RSA Population of Legally Blind Closures for FY 80

Data Source	Wage Earner Status at Closure									
	Wage Earner 1		Wage Earner 2		Non-Wage Earner 1		Non-Wage Earner 2		Total	
	N	%	N	%	N	%	N	%	N	%
RTC Sample	74	34.6	18	8.4	69	32.2	53	24.8	214	100
FY 80 RSA Population*	3926	31.1	628	5.0	4954	39.2	3123	24.7	12631	100

*Note: FY 80 figures abstracted from Kirchner & Peterson (1982). Additional data were provided from Kirchner.

Wage Earner Outcome Groups Descriptive Information

Overview

In the data collection process, each of Wage Earner Outcome groups yielded information which in some cases went beyond the initial scope of the project. The information yielded appears to have value to rehabilitation administrators

allocating resources for blind and severely impaired clients of state agencies. Quantitative and categorical information were abstracted during the case review process. Quantitative information includes the data abstracted from the R-300 form (R-variables), the data abstracted from the case record (C-variables), and case services expenditure data (E-variables). Categorical information abstracted includes data abstracted from the R-300 form (R-variables) and data abstracted from the case record (C-variables). The tables displaying the means and standard deviations for each of the quantitative variables and for the crosstabulations of the categorical variables by the Wage Earner groups are available in a technical data appendix.

R-300 Data

Data abstracted from the R-300 are one of the primary sources of information on which rehabilitation administrators base resource allocation decisions. These data have also been the primary data source of information for other outcome studies in rehabilitation research. The following tables are specific, it should be noted, to blind and severely visually impaired clients and to the four Wage Earner group classification system of this study.

R-300 categorical data. To facilitate comparisons with data generated by a rehabilitation agency, the R-300 variables, other than those derived as indexes of an R-300 variable (R27b, for example), are displayed in terms of categories specified by the RSA manual. A table of contents for the R-300 data is included in a technical data appendix.

To provide more specific eye disorder categorical data than could be obtained from the R-300 coding system, the specific visual disorder diagnoses of each case were identified and classified according to The International Classification of Diseases, 9th Revision, Clinical Modifications, (Commission on

Professional and Hospital Activities, 1980). The visual disorder diagnoses at referral appear in Tables 7, 8, and 9. The specific diagnoses are displayed in these tables by site and affection categories similar to the system used in National Society to Prevent Blindness publications (e.g., National Society to Prevent Blindness, 1980).

R-300 quantitative data. The R-300 quantitative data abstracted from the case records are included in a technical appendix.

Case Record Data

The R-300 reporting form used by state rehabilitation agencies provides a considerable amount of information. It does not, however, permit the collection of data which previous research has indicated to have a relationship to rehabilitation outcome for blind and severely visually impaired state agency clients. Also, the R-300 data do not permit the inclusion of other variables such as C11: Occupational Goal TVQ at First IWRP, which may be related to case service outcome.

Case Services Expenditure Data

Expenditures for services provided to blind clients were abstracted from the case records and from agency fiscal records. Expenditures of significant interest to the blindness field include monies spent for reader services (E92) and other physical restoration services (E24) which includes laser treatment for clients with glaucoma. All expenditure data are quantitative data. A table of contents listing the expenditures variables is included in a technical data appendix.

Visual Impairments and Other Disability Characteristics

Visual impairments. Of the 619 cases included in the study, 67 (10.8%)

Table 7

Primary Eye Disorder

Primary Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Eyeball Disorders	5	2.5	6	9.5	6	2.9	4	2.4	21	3.4
Myopia	2	1.0	4	6.3	1	0.5	7	4.7	14	2.3
Glaucoma - Adult Onset	8	4.0	2	3.2	15	7.4	4	2.4	29	4.7
Albinism	7	3.5	0	0.0	2	1.0	0	0.0	9	1.5
Other Eyeball Disorders	16	7.9	1	1.6	4	2.0	8	5.3	29	4.7
Keratitis	2	1.0	1	1.6	3	1.5	1	0.7	7	1.1
Other Corneal-Scleral Disorders	13	6.4	1	1.6	6	2.9	7	4.7	27	4.4
Prenatal Cataract	18	8.9	6	9.5	8	3.9	3	2.0	35	5.7
Senile Cataract	1	0.5	0	0.0	2	1.0	1	0.7	4	0.6
Other Cataract	22	10.9	4	6.3	43		12	8.0	81	13.1
Astigmatism	1	0.5	0	0.0	0	0.0	0	0.0	1	.02
Aphakia	3	1.5	6	9.5	0	0.0	3	2.0	12	1.9
Miscellaneous Lens	0	0.0	0	0.0	0	0.0	0	0.0	2	0.3
Chorioretinitis	7	3.5	1	1.6	5	2.5	3	2.0	16	2.6

Table 7 (continued)

Primary Eye Disorder

Primary Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Uveitis	0	0.0	1	1.6	1	0.5	0	0.0	2	0.3
Other Uveal Tract	0	0.0	0	0.0	0	0.0	1	0.7	1	0.2
Detachment of Retina	2	1.0	3	4.8	1	0.5	3	2.0	9	1.5
Macular Degeneration	6	3.0	1	1.6	19	9.3	8	5.3	34	5.5
Retinitis Pigmentosa	9	4.5	7	11.1	12	5.9	6	4.0	34	5.5
Diabetic Retinopathy	11	5.4	1	1.6	42	20.6	23	15.3	77	12.3
Other Retinopathy	17	8.4	2	3.2	4	2.0	9	6.0	32	5.2
Other Retinal Disorder	13	6.4	2	3.2	7	3.4	9	6.0	31	5.0
Optic Nerve Atrophy	17	8.4	6	9.5	11	5.4	20	13.3	54	8.7
Optic Neuritis	0	0.0	0	0.0	1	0.5	1	0.7	2	0.3
Nystagmus	8	4.0	3	4.8	3	1.5	5	3.3	19	3.0
Other Optic Nerve Disorders	7	3.5	0	0.0	2	1.0	7	4.7	16	2.6
Not Specified	7	3.5	5	7.9	6	2.9	3	2.0	21	3.4
Total	202	100	63	100	204	100	150	100	619	100

Table 8

Presence of Second Eye Disorder

Second Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Eyeball Disorders	1	0.5	2	3.2	4	2.0	5	3.3	12	1.9
Myopia	5	2.5	1	1.6	3	1.5	1	0.7	10	1.6
Glaucoma - Adult Onset	5	2.5	2	3.2	8	3.9	9	6.0	24	3.9
Other Eyeball Disorders	3	1.5	4	6.3	0	0.0	4	2.4	11	1.8
Keratitis	1	0.5	0	0.0	1	0.5	0	0.0	2	0.3
Other Corneal-Scleral Disorders	9	4.5	2	3.2	3	1.5	3	2.0	17	2.7
Prenatal Cataract	2	1.0	4	6.3	5	2.5	3	2.0	14	2.4
Other Cataract	10	5.0	4	6.3	15	7.4	5	3.3	34	5.5
Hypermetropia	1	0.5	0	0.0	1	0.5	0	0.0	2	0.3
Astigmatism	8	4.0	1	1.6	1	0.5	0	0.0	11	1.8
Presbyopia	0	0.0	0	0.0	1	0.5	1	0.7	2	0.3
Aphakia	12	5.9	2	3.2	12	5.9	6	4.0	32	5.2
Miscellaneous Lens	1	0.5	0	0.0	1	0.5	1	0.7	3	0.5
Chorioretinitis	5		0	0.0	3	1.5	2	1.3	10	1.6

Table 8 (continued)

Presence of Second Eye Disorder

Second Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Uveitis	1	0.5	0	0.0	1	0.5	0	0.0	2	0.3
Other Uveal Tract	1	0.5	0	0.0	0	0.0	0	0.0	1	0.2
Detachment of Retina	1	0.5	2	3.2	3	1.5	5	3.3	11	1.8
Macular Degeneration	2	1.0	0	0.0	6	2.9	1	0.7	9	1.5
Retinitis Pigmentosa	1	0.5	0	0.0	0	0.5	1	0.7	2	0.3
Diabetic Retinopathy	0	0.0	1	1.6	5	2.5	2	1.3	8	1.3
Other Retinopathy	0	0.0	0	0.0	0	0.0	3	2.0	3	0.5
Other Retinal Disorder	7	3.5	1	1.6	7	3.4	6	4.0	21	3.4
Optic Nerve Atrophy	5	2.5	1	1.6	3	1.5	3	2.0	12	1.9
Optic Neuritis	0	0.0	0	0.0	2	1.0	0	0.0	2	0.3
Nystagmus	18	8.9	2	3.2	4	2.0	8	5.3	32	5.2
Other Optic Nerve Disorders	0	0.0	1	1.6	0	0.0	0	0.0	1	0.2
Vitreous Body Disorder	0	0.0	0	0.0	6	2.9	0	0.0	6	1.0
Not Specified	11		5	7.9	15	7.4	5	3.3	36	5.8
None	92	45.5	28	44.4	94	46.1	75	50.0	289	46.7
Total	202	100	63	100	204	100	150	100	619	100

Table 9

Presence of Third Eye Disorder

Third Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Eyeball Disorders	2	1.0	1	1.6	1	0.5	3	2.0	7	1.1
Myopia	1	0.5	0	0.0	2	1.0	0	0.0	3	0.5
Glaucoma - Adult Onset	1	0.5	0	0.0	4	2.0	3	2.0	8	1.3
Other Eyeball Disorders	4	1.2	2	3.2	1	0.5	1	0.7	8	1.3
Keratitis	0	0.0	0	0.0	0	0.0	1	0.7	1	0.2
Other Corneal-Scleral Disorders	2	1.0	0	0.0	2	1.0	3	2.0	7	1.1
Prenatal Cataract	2	1.0	0	0.0	1	0.5	0	0.0	3	0.5
Senile Cataract	0	0.0	0	0.0	1	0.5	0	0.0	1	0.2
Other Cataract	1	0.5	2	3.2	7	3.4	5	3.3	15	2.4
Astigmatism	1	0.5	0	0.0	0	0.0	0	0.0	1	0.2
Aphakia	2	1.0	2	3.2	6	2.9	1	0.7	11	1.8
Miscellaneous Lens	0	0.0	1	1.6	0	0.0	0	0.0	1	0.2
Chorioretinitis	0	0.0	0	0.0	1	0.5	0	0.0	1	0.2
Uveitis	1	0.5	0	0.0	0	0.0	1	0.7	2	0.3
Detachment of Retina	1	0.5	2	3.2	1	0.5	0	0.0	4	0.6

Table 9 (continued)

Presence of Third Eye Disorder

Third Eye Disorder	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Macular Degeneration	1	0.5	0	0.0	1	0.5	0	0.0	2	0.3
Retinitis Pigmentosa	0	0.0	0	0.0	0	0.0	1	0.7	1	0.2
Diabetic Retinopathy	1	0.5	0	0.0	0	0.0	0	0.0	1	0.2
Other Retinopathy	1	0.5	1	1.6	2	1.0	0	0.0	4	0.6
Other Retinal Disorder	0	0.0	0	0.0	4	2.0	2	1.3	6	1.0
Optic Nerve Atrophy	1	0.5	1	1.6	0	0.0	1	0.7	3	1.0
Optic Neuritis	0	0.0	0	0.0	1	0.5	0	0.0	1	0.2
Nystagmus	9	4.5	1	1.6	1	0.5	3	2.0	4	0.6
Other Optic Nerve Disorders	1	0.5	0	0.0	0	0.0	0	0.0	1	0.2
Vitreous Body Disorder	0	0.0	0	0.0	0	0.0	2	1.3	2	0.3
Not Specified	9	4.5	1	1.6	3	1.5	6	4.0	19	3.1
None	161		49		165	80.8	117	78.0	492	79.5
Total	202	100	63	100	204	100	150	100	619	100

subjects were blind in both eyes and had no light perception. Of the remaining cases, 552 (89.2%), were legally blind at referral, that is, with correction not more than 20/200 in the better eye or a field limitation within 20 degrees. Displayed in Table 10 are the number and percent of the sample who were totally blind or legally blind at referral in each of the Wage Earner outcome groups.

Table 10.

Degree of Visual Loss Classification by Wage Earner Outcome Groups.

Degree of Visual Loss Classification	Wage Earner 1		Wage Earner 2		Non-Wage Earner 1		Non-Wage Earner 2		Total	
	N	%	N	%	N	%	N	%	N	%
Totally Blind	19	3.1	13	2.1	15	2.5	20	3.2	67	10.8
Legally Blind	183	29.6	50	8.1	189	30.5	130	21.0	552	89.2
Total	202	32.6	63	10.2	204	33.0	150	24.2	619	100.0

From the eye care professional s report in each subject s case record, up to three visual disabilities were recorded. In those cases where more than one eye condition was listed, the first visual impairment reported as the diagnosis by the eye care professional was recorded as the subject's first visual impairment, the second visual impairment listed was recorded as the second, and the third diagnosis of a visual disability reported was recorded as the third eye condition. It was found that 53.5 percent, or 330 subjects, were reported as having two visual disorders, and 127 subjects, or 20.5 percent, were reported as having three visual disorders.

The most frequently reported first eye disorder was cataracts (120 or 19.4%

of the cases) followed by diabetic retinopathy (77 or 12.5% of the cases) and optic nerve atrophy (54 or 8.7% of the cases). The most frequently reported second eye disorder was cataracts (45 or 13.6%). The most frequently recorded third eye disorder was the broad category of undetermined and not specified (19, or 15%) followed by nystagmus (14 or 11%). Tables 7, 8, and 9 show the distribution of the first, second, and third visual impairments by site and affection across the Wage Earner outcome groups.

In Table 11 is displayed a comparison of the percentage of visual disorders of the cases sampled with the 1978 National Society to Prevent Blindness legally blind site and type of affection data (National Society to Prevent Blindness, 1980). The mean number of visual disorder diagnoses per case was 1.74, which indicates that a large percentage of the 619 cases sampled had multiple eye affections. Retinal disorders were the most frequently recorded eye disorders, followed by lens disorders. The leading cause of blindness was cataract disorders (22.5%). The second most frequent cause of blindness was diabetic retinopathy (7.9%) followed by disorders coded as Undetermined and Not Specified (7.0%).

Other disabilities. The sample was reviewed to determine if the subjects had disabilities in addition to the visual disability. In the cases reviewed, 428 (69.2%) subjects were found to have a second disability. The Non-Wage Earner 1 group had the largest proportion (83.8%) of second disabilities; the Wage Earner 1 group had the smallest proportion (49.5%) of second disabilities. A third disability was established for 238 (38.4%) of the subjects. The group with the largest proportion of third disabilities was the Non-Wage Earner 1 group (50% or 102); the group with the smallest proportion of third disabilities was the Wage Earner 1 group (21.8% or 44).

Table 11

Distribution of Cases by Site and Type of Affection Compared with Selected 1978 National Society to Prevent Blindness Data

Site and Type of Affection	Current Study Percentages	NSPB Percentages
Eyeball	20.0	22.8
Glaucoma Adult Onset	5.6	13.5
Myopia	4.0	4.0
Hypermetreopia	0.1	N/R
Astignatism	1.2	N/R
Presbyopia	0.1	N/R
Albinism	0.8	1.4
Other	8.2	3.9
Cornea and Sclera	5.6	5.0
Keratitis	0.9	2.0
Other	4.7	3.0
Lens	23.0	14.4
Cataract	22.5	13.8
Prenatal	4.8	2.6
Senile	0.4	8.3
Other	17.2	2.9
Other	0.6	0.6
Uveal Tract	3.1	6.1
Uveitis	0.5	2.3
Chorioretinitis	2.5	2.7
Other	0.1	1.1
Retina	26.5	30.9
Detachment of Retina	2.2	1.7
Macular Degeneration	4.1	11.7
Retinitis Pigmentosa	3.4	4.7
Diabetic Retinopathy	7.9	6.6
Other Retinopathy	3.6	1.7
Retrolental Fibroplasia and Other	5.3	4.5
Optic Nerve and Optic Pathway	14.4	11.4
Optic Nerve Atrophy	6.4	7.0
Optic Neuritis	0.4	1.6
Nystagmus	6.0	1.3
Other	1.6	1.5
Vitreous	0.7	0.2
Multiple Affections	*	5.4
Undetermined and Not Specified	7.0	3.8
TOTAL	100.3	100.0

NOTE. N/R = not reported by NSPB. * = Multiples affections were not tabulated for this table.

The most frequently reported non-visual disability (second disability) for the sample was diabetes mellitus (112 or 18.1% of the cases). Hypertension was the most frequently recorded third disability for the sample (35 or 5.7% of the cases). Tables 12 and 13 show the three most prevalent secondary and tertiary disabilities by the Wage Earner outcome groups.

Despite the frequency of diabetes mellitus, relatively few cases were observed which included comprehensive medical diagnostic evaluations of the condition. Few case folders included documentation that the diabetic retinopathic client either received services such as dietary counseling or other health related services or was assessed to determine if these kinds of services were needed. Few cases were observed which included treatment plans for the diabetic conditions, whether payment for the service was from a third party, the state agency, or some other source.

Selected Descriptors of the Work Status Outcome Groups

A complete presentation of the characteristics of the outcome groups may be found in a technical appendix available from the RRTC. The following presentation is intended as an overview of the characteristics associated with each of the outcome closure groups prior to the presentation of the discriminate function analysis results. Complete data are presented in the technical appendix.

Age at referral. (Table 14) The youngest group (M = 34.8; SD = 16.6) was the competitively employed closure group. The oldest group (M = 56.3; SD = 16.5) was the homemaker group. The mean age of subjects closed in sheltered employment was 36.1 (SD = 16.6). The clients closed as unemployed had a mean age of 39.9 (SD = 19.6).

Gender. (Table 15) Males constituted 47.8 percent (N = 296) of the sample. In the competitively employed closure group, 120 (59.4%) of the sub-

Table 12. Three Most Prevalent Secondary Disabilities

Wage Earner Groups											
1			2			3			4		
Disability	RSA Code	%	Disability	RSA Code	%	Disability	RSA Code	%	Disability	RSA Code	%
Diabetes Mellitus	614	8.4	Moderate Mental Retardation	532	7.9	Diabetes Mellitus	614	30.4	Diabetes Mellitus	614	22.0
Hypertension	645	6.4	Obesity and/or Goiter	615	7.9	Hypertension	645	5.9	Personality Disorder	522	6.0
Personality Disorder	522	4.0	Mild Mental Retardation	530	6.3	Coronary Heart Disease	642	3.9	Alcoholism	520	4.7
			Hypertensive Heart	644	4.8						
			Hypertension	645	4.8						

Note. The listing extends beyond three because of ties.

Table 13. Three Most Prevalent Tertiary Disabilities

Wage Earner Groups												
1			2			3			4		
Disability	RSA Code	%	Disability	RSA Code	%	Disability	RSA Code	%	Disability	RSA Code	%
Hypertension	645	2.0	Mild Mental Retardation	530	4.8	Hypertension	645	9.3	Hypertension	645	8.0
Obesity and/or Goiter	615	1.5	Mild Hearing Loss	229	3.2	Cardiovascular Disease	643	5.4	Cardiovascular Disease	643	5.3
Genitourinary Condition	670	1.5	Genitourinary Condition	670	3.2	Arthritis-Rheumatism	330	5.4	Nonspecified Nervous System Disorder	639	4.0
Arthritis-Rheumatism	330	1.0	All remaining 14 Disabilities rank 3rd		1.6	Genitourinary Condition	670	3.9	Genitourinary Condition	670	4.0
Alcoholism	520	1.0									
Personality Disorder	522	1.0									
Nonspecified Nervous System Disorder	639	1.0									

Note. The listing extends beyond three because of ties.

Table 14

Summary Comparison for Quantitative Variables - All States Combined (Group A)

Wage Earner Groups	Age at Referral	Months in Statuses 00-02	Months Since Previous Closure	No. of Dependents	Total Number in Family
Wage I					
Mean	34.81	2.73	18.70	.79	2.75
Standard Deviation	16.58	4.58	16.03	1.32	1.80
Valid N	202	202	30	202	202
Wage II					
Mean	36.08	2.59	16.75	.56	2.84
Standard Deviation	16.58	4.34	10.89	1.06	1.65
Valid N	63	63	12	63	63
Non-Wage I					
Mean	56.30	2.48	15.20	.70	2.39
Standard Deviation	16.51	4.45	10.23	1.22	1.60
Valid N	204	204	15	204	204
Non-Wage II					
Mean	39.91	2.57	12.29	.67	2.65
Standard Deviation	19.62	3.93	9.52	1.30	1.84
Valid N	150	150	17	150	150

Table 14 (continued)

Summary Comparison for Quantitative Variables - All State Combined (Group A)

Wage Earner Groups	Highest Grade Completed	Weekly Earnings at Referral	Total Family Income Category at Referral	Public Assist. Monthly Amount at Referral	Time on Public Assist. at Referral
Wage I					
Mean	11.25	32.35	4.71	37.95	.75
Standard Deviation	3.47	76.61	3.71	78.43	1.71
Valid N	202	202	184	202	201
Wage II					
Mean	8.17	6.10	4.00	40.65	1.08
Standard Deviation	4.01	25.91	3.49	69.92	2.08
Valid N	63	63	55	63	63
Non-Wage I					
Mean	9.58	5.83	4.66	22.64	.70
Standard Deviation	3.57	34.63	3.17	55.28	1.86
Valid N	204	204	185	204	201
Non-Wage II					
Mean	10.47	12.23	4.17	48.44	1.19
Standard Deviation	3.50	42.47	3.34	102.70	2.19
Valid N	150	150	137	150	149

Table 15

Gender

Gender	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Male	120	59.4	34	54.0	55	27.0	87	58.0	296	47.8
Female	82	40.5	29	46.0	149	73.0	63	42.0	323	52.2
Total	202	100	63	100	204	100	150	100	619	100

jects were male. A similar proportion was obtained for the sheltered workshop closures: there were 34 (54.0%) males in this group. Females dominated the homemakers (N = 149; 73%) group. More males (N = 87; 58%) were closed unemployed than females (N = 63; 42%).

Marital status. (Table 16) The subjects were almost equally divided between being married at referral (N = 228; 36.8%) and having never been married (N = 225; 36.3%). The largest percentage of the subjects in the Wage Earner 1 group were never married (N = 103; 50.9%); neither were the Wage Earner 2 group subjects (N = 36; 57.1%). Most of the Non-Wage Earner 1 subjects were married (N = 103; 50.5%) or widowed (N = 57; 27.9%). The majority of the Non-Wage Earner 2 group were either never married (N = 62; 41.3%) or married (N = 48; 32%), rather than separated, divorced, or widowed.

Highest grade completed at referral. (Table 14) Clients closed in competitive employment situations completed the greatest number of years of education (M = 11.3; SD = 3.5), followed by those closed as unemployed (M = 10.5; SD = 3.5). The fewest number of years of education were reported for subjects closed in sheltered workshops (M = 8.2; SD = 4.0). Homemaker closures had an average of 9.6 years of education (SD = 3.6).

Weekly earnings at referral. (Table 14) The average weekly earnings at referral of the subjects closed in competitive employment was $32.35 (SD = $76.61). The group of subjects closed as unemployed had mean weekly earnings at referral of $12.23 (SD = $42.27). The mean weekly earnings at referral of the sheltered workshop group was $6.10 (SD = $25.51); for the homemaker group the mean weekly earnings at referral was $5.83 (SD = $34.63).

Weekly earnings at closure. (Table 17) Weekly earnings at closure varied considerably within and among the wage earner status outcome groups. The

Table 16

Marital Status

Marital Status	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Married	60	29.7	17	27.0	103	50.5	48	32.0	228	36.8
Widowed	14	6.9	3	4.8	57	27.9	18	12.0	92	14.9
Divorced	20	9.9	4	6.3	9	4.4	16	10.7	49	7.9
Separated	5	2.5	3	4.8	11	5.4	6	4.0	25	4.0
Never Married	103	50.9	36	57.1	24	11.8	62	41.3	225	36.3
Total	202	100	63	100	204	100	150	100	619	100

Table 17

Summary Comparison for Quantitative Variables - All States Combined (Group A)

Wage Earner Groups	All Services Total	Rehab. Facilities Total	Social Security Trust Fund Total	Supplemental Security Income Fund Total	Weekly Earnings at Closure
Wage I					
Mean	3249.09	767.05	187.77	466.06	130.94
Standard Deviation	4156.83	1845.62	826.57	1527.68	86.81
Valid N	202	202	202	202	202
Wage II					
Mean	3632.35	2055.21	81.63	328.37	53.32
Standard Deviation	5965.56	3905.76	346.36	1043.23	48.52
Valid N	63	63	63	63	63
Non-Wage I					
Mean	1500.21	788.15	94.82	266.78	0.00
Standard Deviation	2334.49	2192.12	831.66	2922.01	0.00
Valid N	204	204	204	204	203
Non-Wage II					
Mean	2841.95	889.07	154.02	571.55	2.79
Standard Deviation	5065.29	2475.58	798.79	2434.32	16.70
Valid N	150	150	150	150	150

Table 17 (continued)

Summary Comparison for Quantitaive Variables - All State Combined (Group A)

Wage Earner Groups	Public Assist. Amount in Dollars at Closure	Occupation at Closure TVQ	Number of Months in Extended Evaluation	Number of Months from Acceptance to Closure
Wage I				
Mean	34.40	61.16	.84	24.52
Standard Deviation	92.58	13.36	3.75	26.25
Valid N	202	202	202	202
Wage II				
Mean	50.70	48.21	1.06	22.14
Standard Deviation	77.67	6.61	3.17	25.15
Valid N	63	63	63	63
Non-Wage I				
Mean	28.27	49.84	.58	13.90
Standard Deviation	77.75	.68	2.56	13.72
Valid N	204	204	204	204
Non-Wage II				
Mean	48.77	52.20	.98	24.05
Standard Deviation	83.15	14.35	4.10	24.99
Valid N	150	10	150	150

average weekly earnings at closure for those cases closed competitively employed was $130.94 (SD = $86.81) and the average weekly earnings at closure for those cases closed in sheltered employment was $53.52 (SD = $48.52). No wages were reported for those cases closed as homemakers (NW-1). However, for a few cases closed as unemployed, wages (M = $2.81; SD = $16.76) were reported. In those cases where wages were reported, the cases were generally closed because the client failed to cooperate with the agency.

Occupation at closure TVQ. (Table 17) In order to assign an index of job difficulty to the job or position in which the case was closed, the total raw score vocational quotient (TVQ) was used. The TVQ is an index of job difficulty for each of 12099 jobs defined in the Dictionary of Occupational Titles (U.S. Department of Labor, 1977). The TVQ was developed by McCroskey (1980) and reported in McCroskey (1980) and McCroskey and Perkins (1981). The mean TVQ score of the 12099 jobs defined in the Dictionary of Occupational Titles (U.S. Department of Labor, 1977) is 57.2 (SD = 14.5) with a range of 30 to 107. The job with the lowest TVQ is wire cutter (DOT number = 731.687038); the job with the highest TVQ is internist (DOT number = 070.101042) (McCroskey, 1980).

During the data collection process, TVQ scores were assigned each job or position held by the subject. For example, a case closed competitively employed as a beautician (DOT number = 332.271010) has a TVQ score of 72. Subjects closed as homemakers were assigned a TVQ of 50, the value associated with DOT code 301.470010, House worker, general. Persons closed in jobs in sheltered workshops were given the TVQ score appropriate for the job title. For example, a person with the job of hand packer in a sheltered workshop was assigned the DOT number 920.587018 with a TVQ score of 42. Persons closed unemployed were not assigned a DOT number or a TVQ score.

The mean TVQ score for subjects closed competitively employed was 61.2 (SD = 13.4). For the sheltered workshop closures, the average TVQ score was 48.2 (SD = 6.6). For the homemaker closures, the mean TVQ score was 49.8 (SD = .68); it should be noted that unpaid family worker closures are included in this group and have a lower TVQ score (48) than homemakers (TVQ = 50). The mean TVQ for those subjects closed as unemployed was 3.48. The mean TVQ score would have been zero had all of the 150 subjects in the group been unemployed at closure. For those ten NWE-2 cases who were working at closure, the mean TVQ score was 52.2 (SD = 14.4). RSA policy, it should be noted, permits a 28 closure with the client working if the rehabilitation counselor can document that the client is failing to cooperate.

Occupational classification at closure. (Table 18) The kinds of occupations in which the blind cases are engaged at closure is exceedingly important. Perhaps more important to an agency administrator, however, is how the occupational categories of those blind cases closed in competitive employment situations compare with the U.S. labor force in those same categories. In Table 19 is shown a comparison of the percentage distributions of DOT Occupational Categories for the U.S. labor force and the WE 1 closures.

The WE 1 closures across the occupational categories compare well with the U.S. labor force data. Cases are being closed in the professional, technical, and managerial occupational categories at a slightly higher rate than in the U.S. labor force. There are similar findings for the occupational categories of service; agriculture, fishing, and forestry; and processing. Rates slightly less than of the U.S. labor force were found for clerical and sales and miscellaneous occupational categories. Rates under half the rate of the U.S. labor force were found for machine trades and structural work occupation categories.

Table 18

Occupation at Closure

Occupation at Closure	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
Professional Technical Managerial	59	29.2	0	0.0	0	0.0	0	0.0	59	9.5
Clerical and Sales	48	23.8	0	0.0	0	0.0	1	0.7	49	7.9
Service Occupations	33	16.3	1	1.6	204	100	1	0.7	239	38.6
Agricultural Fisheries Forestry	13	6.4	0	0.0	0	0.0	0	0.0	13	2.1
Processing Occupations	3	1.5	3	4.8	0	0.0	0	0.0	6	1.0
Machine Trades	6	3.0	13	20.6	0	0.0	1	0.7	20	3.2
Benchwork Occupations	18	8.9	33	52.4	0	0.0	1	0.7	52	8.4
Structural Work	9	4.5	1	1.6	0	0.0	0	0.0	10	1.6
Miscellaneous	13	6.4	12	19.0	0	0.0	1	0.7	26	4.2
No Work	0	0.0	0	0.0	0	0.0	140	93.3	140	22.6
School-Institutional	0	0.0	0	0.0	0	0.0	5	3.3	5	0.8
Total	202	100	63	100	204	100	150	100	619	100

Table 19

Comparison of the U.S. Labor Force and Competitively Employed Closures.

DOT Occupational Category	Percentage of Labor Force	Percentage of WE 1 Closures
Professional, technical and managerial	25	29.2
Clerical and sales	25	23.7
Service	16	16.3
Agriculture, fishing, and forestry	4	6.4
Processing	2	1.5
Machine trade	6	3.0
Benchwork	4	8.9
Structural work	9	4.4
Miscellaneous	8	6.4
TOTAL	99	100

SOURCE: Labor force data derived from April 1971, Current Population Survey; sample (N = 60,441) includes currently employed workers and experienced unemployed for whom a census code could be assigned. Excluded are 12 percent of sample for whom DOT codes could not be assigned. Data on distribution of DOT titles by category provided by the Department of Labor occupational analysis program (Miller, Treiman, Cain, & Roos, 1980).

The benchwork occupational category was found at a rate twice as high for the blind competitively employed closures as among the U.S. labor force.

Reasons for closure. (Table 20). Over 75 percent (N = 469) of the samples were closed in either the WE 1, WE 2, or NW 1 groups. Of the 150 cases closed in the NW 2 group, the most frequent reason given was client refusal of services (N = 34; 22.7%), followed by failure of client to cooperate (N = 30; 20%). Almost as many cases (N = 29; 19.3%) were closed because the client could not be located. Handicap too severe (N = 26; 17.3%), and institutionalization (N = 7; 4.7%) accounted for nearly one-third of the 28 closure.

Predictive Data Analyses

Discriminate Function Analysis

Step-wise multiple discriminate analysis was employed to identify specific variables which discriminate or help classify cases into outcome categories using the information from the independent variable list. The discriminate analysis was performed by the Statistical Package for the Social Sciences (Nie, Bent, & Hull, 1975) Release 9.0 using the Wilks method, prior probabilities determined by group size, and other parameters at default values. The results of the discriminate analyses yielded an eigenvalue and a set of coefficients for each discriminate function as shown in Table 21. The eigenvalue for canonical function 1 indicates that 58.7% of the variance is accounted for by the groups and amounts to a moderate amount of discriminatory power for the first function. Functions 2 (25.8%) and 3 (15.5%) have less discriminatory power.

The procedure for testing the functions for significance involves examining the discriminating ability in the set of variables prior to deriving the function. After deriving one function, the remaining residual discrimination is

Table 20

Reason not Rehabilitated

Reason not Rehabilitated	Non-Wage Earner II	
	N	%
Unable to be Located	29	19.3
Handicap too severe	26	17.3
Refused Services	34	22.7
Death	15	10.0
Institution-alized	7	4.7
Transferred to another state	9	6.0
Failed to cooperate	30	20.0
Total	150	100

available for extraction by subsequent functions. If the remaining discrimination is too small, it may be useless to derive any more functions even though they can be calculated. The statistic used to measure discrimination is Wilk's lambda or the U statistic. A lambda close to 1.0 indicates very little discrimination while a value near zero indicates high discrimination. In Table 21 the first row shows that a lambda value of .307 was obtained indicating that there is significant discrimination in the set of variables before derivation of any discriminate functions and that the first function will be significant by the Chi-squared test statistic. After derivation of the first function, the remaining discrimination (lambda=.582) is also significant, as is the subsequent remaining discrimination for function 3 although the lambda value of .809 indicates that the function is weak.

Table 21

Summary of Discriminate Functions

Function	EIGEN Value	Canonical Correlation	After Function	Wilks' Lambda	df	Chi Square
-	-	-	0	.307	156	681.9*
1	.892	.687	1	.582	102	313.8*
2	.392	.531	2	.809	50	122.4*
3	.235	.437	-	-	-	-

*p<.0001

Because this study is an exploratory search for potentially discriminating variables, some of the variables entered (see Table 3) into the equation were weak discriminators as well as intercorrelated, thereby having redundant discri-

minatory information. Stepwise discriminate analyses address this problem. In the stepwise selection procedure, the first variable "entered" into the equation is the single best discriminating variable. The order of entry of the variables can be assumed to reflect the order of importance of the variables in the discrimination process. Table 22 shows the order of variables selected for entry into the stepwise discriminate equation and the associated Wilks lambda value for the collection of variables entered up to step twenty. A total of 52 significant discriminating variables was entered before the stepwise selection ceased.

The results presented and discussed are limited to an examination of the first twenty of these variables. In Appendix C is a summary of the complete stepwise discriminate analysis. It should be noted that after step 29 the changes in the Wilks lambda were very small. For example, the change between step 20 and step 21 of 0.005575 indicates that the variable entered at step 21 contributed little to the overall discrimination power even though it was statistically significant. For all variables past 20, the average increment in the Wilks' lambda is 0.0031105; therefore, a decision was made to focus discussion on the first 20 variables.

Classification of Cases

A major reason for employing discriminate analysis is that the technique can provide information regarding classification of cases into outcome groups using the discriminating variables. The classification results are summarized in Table 23. The last line in this table shows that approximately 68% of the cases were correctly classified by the discriminating variables. Given that 25% correct classification is expected by chance, 68 percent represents an improvement over chance of 272 percent.

Table 22

Summary of the First Twenty Discriminating Variables

Step	Wilks' lambda	Significance Level	Variable	Label
1	.751696	<.0001	C2	Age at Onset of Blindness
2	.658809	<.0001	C11	Occupational Goal TVQ at First IWRP
3	.618832	<.0001	E36	Expenditures for Personal Adjustment Training-Vocational Adjustment Training (PAT/VAT)
4	.588837	<.0001	R9A	Gender
5	.567703	<.0001	R33D	Primary Support at Referral=Other Sources
6	.551384	<.0001	R26	Highest Grade Completed
7	.536133	<.0001	C26	Proximity in miles to VR Counselor
8	.523513	<.0001	R64A	Received Non-Institutional Training
9	.510802	<.0001	R60A	Received Institutional Training
10	.499458	<.0001	R59	Received Physical Restoration Services
11	.490195	<.0001	NDIS	Number of Additional Disabilities
12	.482031	<.0001	E23	Expenditure for Hospital Convalescence
13	.474204	<.0001	R67	Received Maintenance
14	.466840	<.0001	C1	Received SSDI During Rehabilitation Process
15	.459126	<.0001	NOCC	Number of Occupations held prior to Referral
16	.452035	<.0001	C15	Time in Months from Previous Occupation to Referral
17	.445096	<.0001	C16	Length of Employment in Last Occupation Prior to Referral
18	.438004	<.0001	R13A	Race: White/Non-white
19	.431628	<.0001	C24	Proximity in miles to Nearest Sheltered Employment Workshop
20	.425660	<.0001	R23A	Currently Married

An examination of the first row of Table 23 indicates that 157 cases (78.5%) of those closed competitively employed were correctly identified by the discriminate analysis. The competitively employed cases misclassified were more similar statistically to the other outcome groups than to the competitively employed group. The homemaker cases were correctly classified at an 84 percent (N = 168) rate. The relatively high correct classification rates for both the competitively employed and homemaker cases may be due to the apparent lower rate of variability within each of these two groups than among the cases in the sheltered workshop outcome or unemployed outcome groups. Cases with Wage Earner 2 outcomes appear to have more in common with the homemaker and unemployed outcome groups than with cases with competitive employment outcomes.

The cases which had unemployment as an outcome were the most heterogeneous, which may have contributed to the lower rate of correct classification (41.2%; N = 61). It appears that 38 cases (25.7%) of the unemployment outcome group had more in common with the competitively employed group cases than with the unemployed outcome cases group, the group in which they actually occurred. Similarly, 41 cases (27.7%) closed as unemployed appear more like homemakers than cases with unemployment outcomes. If the 61 (41.2%) cases correctly classified as a member of group 4 had actually been closed unemployed and the other 87 cases had been closed in the outcome group with whose members they apparently share more common characteristics, then the proportion of cases closed as unemployed might have been reduced from approximately 25 percent of the sample to ten percent of the sample.

Table 23

Classification Results of the Stepwise Discriminate Analysis

Actual group	No. of cases	Predicted group membership 1	2	3	4
Wage Earner 1	200	157 78.5%	4 2.0%	21 10.5%	18 9.0%
Wage Earner 2	60	6 10.0%	28 46.7%	14 23.3%	12 20.0%
Non-Wage Earner 1	200	8 4.0%	4 2.0%	168 84.0%	20 10.0%
Non-Wage Earner 2	148	38 25.7%	8 5.4%	41 27.7%	61 41.2%

Percent of "grouped" cases correctly classified: 68.09%

Classification processing summary
619 cases were processed.
11 cases had at least one missing discriminating variable.
608 cases were used for printed output.

Analyses of the Relationship Among the Outcome Groups and Predictive Variables

Table 24 shows a summary of the F-ratios, means, and differences between wage earner groups for the variables in order of importance (determined by order of entry into discriminate analysis). The order of variables in Table 24 is the same as that in Table 23. Table 24 uses the numbers 1, 2, 3, and 4 to designate the wage earner groups WE 1, WE 2, NW 1, and NW 2, respectively. F-ratios for one-way ANOVAs for each variable are given in the second column. All F-ratios

Table 24

Summary of Discriminating Variables in Order of Importance Showing Means for Wage Earner Categories

Variable	F-Ratio	Wage Earner Group Number			
1. C2	63.1	2	1	4	3
Age at Onset of Blindness		16.2	19.2	28.1	46.7
2. C11	41.4	3	2	4	1
Occupational Goal TVQ at First IWRP		50.5	51.0	55.6	61.2
3. E36	15.1	1	3	4	2
Expenditures for Personal Adjustment Training-Vocational Adjustment Training (PAT/VAT)		587	703	904	2746
4. R9A	19.4	1	4	2	3
Gender		.406	.420	.460	.730
5. R33D	11.9	3	4	2	1
Primary Support at Referral: Other Sources		.054	.100	.111	.243
6. R26	14.9	2	3	4	1
Highest Grade Completed		8.17	9.58	10.5	11.2
7. C26	5.66	4	2	3	1
Proximity in miles to VR Counselor		13	18 1	21.1	21.2
8. R64A	6.10	4	3	1	2
Received Non-Institutional Training		.260	.348	.391	.556
9. R60A	26.4	3	2	4	1
Received Institutional Training		.029	.079	.213	.337

10.R59	7.13	4	2	1	3
Received Physical Restoration Services		.347	.365	.480	.574
11.NDIS	23.5	1	2	4	3
Number of Additional Disabilities		.738	1.10	1.24	1.38
12.E23	3.11	2	4	1	3
Expenditure for Hospital Convalescence		45	78.9	192	195
13.R67	11.95	3	4	2	1
Received Maintenance		.132	.273	.362	.376
14.C1	2.17	1	2	3	4
Received SSDI During Rehabilitation Process		.312	.333	.378	.440
15.NOCC	2.05	2	4	3	1
Number of Occupations held prior to Referral		1.38	1.44	1.61	1.63
16.C15	11.8	1	2	4	3
Time in months From Previous Occupation to Referral		8.54	22.9	26.6	43.2
17.C16	31.5	1	2	4	3
Length of Employment in Last Occupation Prior to Referral		9.34	9.36	12.3	20.9
18.R13A	3.70	2	4	3	1
White/Non-White		.556	.720	.735	.767
19.C24	4.43	2	3	4	1
Proximity in miles to Nearest Sheltered Employment Workshop		21.4	43.5	45.2	50.2
20.R23A	8.59	2	1	4	3
Currently Married		.270	.297	.320	.505

Note. 1 = Wage Earner 1; 2 = Wage Earner 2; 3 = Non-Wage Earner 1; and 4 = Non-Wage Earner 2. Group subsets with a common underline are not significantly different by the Newman-Keuls Test at the .05 level.

displayed in Table 24 were statistically significant at the .05 level. The means for each group for each variable are given in ascending order, and the underlining scheme indicates significant differences between groups by the Newman-Keuls test. Groups with a common underline were not significantly different.

In Figures 1-4 are displayed narrative analyses of the results of the Newman-Keuls Tests displayed in Table 24. These narratives permit isolation of characteristics specific to a Wage Earner group in comparison with the other groups. For example, the competitively employed outcome group (WE 1) is significantly different from all other groups in terms of educational level at referral, the number of additional disabilities, the TVQ score of the vocational goal at the first IWRP, the source of support at referral, and type of training received.

The relationship of the first twenty most potent predictor variables to each of the outcome groups presented in Figures 1-4 strongly suggests that each of the Wage Earner groups has relatively unique characteristics. The relative differences among the outcome groups support the need to employ measures of rehabilitation outcome that are more functionally related and specific to the wage earning level and status than the traditional 26 - 28 outcome measure.

Figure 1

Characteristics of Wage Earner 1 Groups That Were Significantly Different From Wage Earner 2, Non-Wage Earner 1, and Non-Wage 2 Groups

1. WE 1 Group Means Significantly Different Group Means of WE 2, NWE 1, and NWE 2

   - WE 1 received primary support at referral from other sources (R33D)
   - WE 1 had highest number of years of education at referral (R26)
   - WE 1 received more institutional training (R60A)
   - WE 1 had fewest number of additional disabilities (NDIS)
   - WE 1 had a higher vocational goal TVQ at the first IWRP (C11)

2. WE 1 Group Means Significantly Different from WE 2

   - WE 1 cases were more likely to be white persons (R13A)
   - WE 1 resided further from a sheltered workshop at referral (C24)
   - WE 1 cases had lower expenditures for personal-vocational adjustment training (E36)

3. WE 1 Group Means Significantly Different from NWE 1

   - WE 1 cases were male more often than female (R9A)
   - WE 1 cases received maintenance more frequently (R67)
   - WE 1 had shorter work histories in the job preceeding referral (C16)
   - WE 1 were more often not currently married (R23A)

4. WE 1 Group Means Significantly Different from NWE 2

   - WE 1 resided farther away from the vocational rehabilitation counselor at referral (C26)
   - WE 1 received physical restoration services more often (R59)

5. WE 1 Group Means Significantly Different from Group Means of NWE 1 and NWE 2

   - WE 1 had a shorter time from previous occupation to referral (C15)
   - WE 1 had an earlier age at onset of blindness (C2)

6. WE 1 Group Mean Significantly Different from WE 2 and NWE 2

   - WE 1 cases received non-institutional training less often than WE 2 cases, but more often than the NWE 2 cases

Figure 2

Characteristics of Wage Earner 2 Group That Were Significantly Different from WE 1, NWE 1, and NWE 2 Groups

1. WE 2 Group Means Significantly Different from Group Means of WE 1, WE 2, and NWE 2

   - WE 2 had the fewest years of education (R26)
   - WE 2 tended to be a non-white group (R13A)
   - WE 2 resided in closer proximity to a sheltered workshop at referral (C24)
   - WE 2 received more non-institutional training (R64A)
   - WE 2 had the highest mean expenditures for personal and vocational adjustment training (E36)

2. WE 2 Group Means Significantly Different from Group Means of WE 1

   - WE 2 had lower vocational goal TVQ scores at the first IWRP (C11)
   - WE 2 received primary support at referral from sources not classified as other (R33D)
   - WE 2 received less institutional training (R60A)
   - WE 2 had more additional disabilities (NDIS)

3. WE 2 Group Means Significantly Different from Group Means of NWE 1

   - WE 2 were younger at the onset of blindness (C2)
   - WE 2 tended to be male (R9A)
   - WE 2 received fewer physical restoration services (R59)
   - WE 2 had fewer additional disabilities (NDIS)
   - WE 2 received more maintenance services (R67)
   - WE 2 had a shorter work history in the job preceeding referral (C16)
   - WE 2 tended to be currently non-married (R23A)

4. WE 2 Group Means Significantly Different from NWE 2

   - WE 2 had a younger age at onset of blindness (C2)
   - WE 2 had a lower vocational goal TVQ at the first IWRP (C11)
   - WE 2 received less institutional training (R60A)

Figure 3

Characteristics of the Non-wage Earner 1 Group That Were Significantly Different from the Wage Earner 1, wage Earner 2, and Non-Wage Earner 2 Groups

1. NWE 2 Groups Means Significantly Different from Group Means of WE 1, WE 2, and NWE 2

   - NWE 2 were oldest group at the onset of blindness (C2)
   - NWE 2 cases tended to be female (R9A)
   - NWE 2 had the second fewest years of education (R26)
   - NWE 2 received less maintenance (R67)
   - NWE 2 held their occupation previous to referral longest (C16)
   - NWE 2 were likely to be currently married (R23A)

2. NWE 1 Group Means Significantly Different from Group Means of WE 1

   - NWE 1 received their primary support from a source that is not other (R33D)
   - NWE 1 had a longer period of unemployment prior to referral (C15)

3. NWE 1 Group Means Significantly Different from Group Means of WE 2

   - NWE 1 received less non-institutional training (R64A)
   - NWE 1 tended to be a predominantly white group (R13A)
   - NWE 1 resided farther from a sheltered workshop (C24)
   - NWE 1 cases had less personal-social adjustment training expenditures (E36)

4. NWE 1 Group Means Significantly Different from the NWE 1 Group Means

   - NWE 1 resided further away at referral from the rehabilitation counselor (C26)

5. NWE 1 Group Means Significantly Different from the WE 1 and WE 2 Groups Means

   - NWE 1 had more non-eye disabilities (NDIS)

6. NWE 1 Group Means Significantly Different from the WE 1 and NWE 2 Groups Means

   - NWE 1 had lower vocational goal TVQ scores at first IWRP (C11)
   - NWE 1 received less institutional training (R60A)

7. NWE 1 Group Means Significantly Different from the WE 2 and NWE 2 Groups Means

   - NWE 1 received more physical restoration services (R59)

Figure 4

Characteristics of the Non-Wage Earner 2 Group That Were Significantly Different from Wage Earner 1, Wage Earner 2, and Non-Wage Earner 2 Groups

1. NWE 2 Group Means Significantly Different from the Group Means of WE 1, WE 2, and NWE 1

   - NWE 2 were younger at the onset of blindness than NWE 1, but older than the other Wage Earner groups at onset of blindness (C2)
   - NWE 2 had a higher first IWRP vocational goal TVQ than NWE 1 or WE 2, but lower than that of the WE 1 (C11)
   - NWE 2 had more years of education than the NWE 1 or WE 2, but less than the WE 1 (R26)
   - NWE 2 received institutional training more frequently than WE 2 or NWE 1, but less frequently than WE 1 (R60A)

2. NWE 2 Group Means Significantly Different from the WE 1 Group Means

   - NWE 2 reported their primary source of support at referral to be something other than other (R33)
   - NWE 2 had more non-eye disabilities (NDIS)
   - NWE 2 had longer period of uemployment prior to referral (C15)

3. NWE 2 Group Means Significantly Different from the WE 2 Group Means

   - NWE 2 tended to be a white group (R13A)
   - NWE 2 lived farther away from a sheltered workshop at referral (C24)
   - NWE 2 cases included fewer expenditures for personal and vocational training (E36)

4. NWE 2 Group Means Significantly Different from the WE 1 and WE 2 Group Means

   - NWE 2 received less non-institutional training (R64A)

5. NWE 2 Group Means Significantly Different from the WE 1 and NWE 1 Groups Means

   - NWE 2 resided closer at referral to a vocational rehabilitation counselor (C26)
   - NWE 2 received fewer physical restoration services (R59)

6. NWE 2 Group Means Significant Different from NWE 1 Group Means

   - NWE 2 cases were more likely male (R9A)
   - NWE 2 cases received more maintenance services (R67)
   - NWE 2 were working for fewer months in their last occupation prior to referral (C16)
   - NWE 2 were less likely to have been currently married at the time of closure (R23A)

Results Summary

Overview

The present study was designed to identify factors predictive of the employment or Wage Earner status outcome of blind and severely visually impaired clients served by state rehabilitation agencies. The employment - unemployment outcome dimension was divided into four categories. Broadly defined, the categories were Wage Earner 1 ("competitively employed" closure), Wage Earner 2 ("sheltered workshop" closure), Non-Wage Earner 1 ("homemaker" closure), and Non-Wage Earner 2 ("unemployed" closure). Of the 619 totally blind and legally blind cases sampled from four state rehabilitative agencies, there were 202 (32.6%) Wage Earner 1 cases, 63 (10.2%) Wage Earner 2 cases, 204 (33.0%) Non-Wage Earner 1 cases, and 150 (24.2%) Non-Wage Earner 2 cases.

Predictive Results

The use of discriminate analysis has revealed that membership in Wage Earner status outcome groups can be predicted using vocational rehabilitation process variables, personal variables which include biographical and visual disability related factors, financial and disincentive variables, occupational history factors, and environmental factors. Training and experience characteristics of the rehabilitation counselor do not, however, contribute significantly to the prediction process.

The vocational rehabilitation process factors predictive of Wage Earner status outcome include occupational goal TVQ at first IWRP, expenditures for personal and vocational adjustment training, receipt of institutional training, receipt of non-institutional training, receipt of physical restoration

services, expenditures for hospital convalescence, and receipt of maintenance payments. Biographical and disability related factors associated with work status outcome are age at onset of blindness, gender, highest grade completed, number of disabilities in addition to blindness, race, and marital status. Financial or disincentive variables associated with outcome include primary support source at referral and receipt of SSDI during case services provision. Occupational history variables included among the variables are number of occupations held by the blind client, the time from the previous occupation to referral, and how long the blind client held the last job prior to referral. Among the environmental factors associated with case outcome are the distance in miles the client lived from the rehabilitation counselor and the mileage from the client to the nearest sheltered workshop.

Accuracy of predicting a person's membership in a wage earner outcome group varied across the four groups. The percent correct classification rate for the homemaker cases, NWE 1 (84.0%), was the highest of the four groups. The next -most correctly classified cases were those with competitive employment closures (WE 1), 78.5 percent. The sheltered employment group (WE 2) was next with an accuracy rate of 46.7 percent. The lowest correct classification rate was 41.2 percent for those cases closed unemployed. The overall correct classification rate was 68.09 percent, an improvement over chance of 272 percent.

Wage Earner Outcome Groups Characteristics

Post-hoc one-way ANOVAs demonstrated that there are differences among the four wage earner outcome groups. The four groups have different pre-vocational rehabilitation processes, different personal and disability related characteristics, and different occupational history characteristics. The four outcome groups also received different arrays of vocational rehabilitation services.

Environmental factors such as proximity to the vocational rehabilitation counselor are also related differentially to the wage earner outcome statuses.

Wage Earner 1. Blind and visually impaired clients closed in the Wage Earner 1 group had completed the most number of years of education at referral. These competitively employed closures also had the fewest number of additional disabilities. Their primary source of support at referral was other than family and friends or transfer payments. The vocational goal TVQ at the first IWRP of the competitively employed group was the highest of all groups. The competitively employed group received institutional training during the rehabilitation process.

Wage Earner 2. The sheltered workshop outcome group had more non-white than white blind and visually impaired persons included in its membership. The sheltered workshop group had the lowest years of education. This group received more non-institutional training than the other groups. Their place of residence at referral was nearer to a sheltered workshop than those of the other outcome groups. More money was spent on personal and social adjustment services than for the other groups.

Non-Wage Earner 1. The Non-Wage Earner 1, or homemaker outcome group, was predominantly a female group and one with the latest age at onset of blindness. It was a group that, at referral, was likely to be currently married and had the second fewest years of education. The majority had been in their previous career position, generally housewife, for more years (more than 20 on the average) than any other group. The Non-Wage Earner 1 group received fewer maintenance services.

Non-Wage Earner 2. The Non-Wage Earner 2 group,or the cases unemployed at closure, were younger at the onset of blindness than the homemaker group but as

a group were older at age of onset than either of the two wage earner outcome groups. The unemployed group had more years of education than either the sheltered workshop or homemaker groups but less than the competitively employed closure group. The unemployed group had a higher first IWRP vocational goal TVQ than the sheltered workshop or homemaker groups but lower TVQ scores than those of the cases closed competitively employed. Similarly the unemployed group received institutional training more frequently than either the sheltered employment or homemaker closure groups but less frequently than those cases closed competitively.

DISCUSSION

Overview

Reduction of the unemployment problems of blind and visually impaired people is the central goal of administrators of state rehabilitation agencies serving the blind. One way for administrators to reduce the unemployment rate of the blind clientele served by the rehabilitation agency is to allocate agency resources in ways which combine with client characteristics that lead to successful employment closures. These resource allocation decisions require an understanding of how agency services and resources interact with client characteristics.

Understanding of the interactions between the characteristics of blind and severely visually impaired clients and allocation of agency resources requires that the relationships among client outcomes, client characteristics, and rehabilitation services provided the client be determined through empirical analyses. The purpose of the present study was to determine if the characteristics of blind and visually impaired clients, the services provided them, and other selected factors could be used to predict the group membership of these clients in one of four employment outcome groups. Associating client characteristics and the delivery of rehabilitative services with categories of employment outcome can enable administrators to allocate resources based on agency goals, characteristics of the agency's clientele, and client needs.

Employment Outcome Criteria

The outcomes of 619 cases of blind and visually impaired persons closed in either status 26 or 28 during fiscal years 1978, 1979, and 1980 in Florida, Kansas, Mississippi, and Ohio were classified by wage earner status at closure.

The traditional 26 closures were divided into three groups: Wage Earner 1, the competitively employed; Wage Earner 2, the sheltered workshop employed; and Non-Wage Earner 1, the homemaker closures. Persons closed in status 28 were categorized as a Non-Wage Earner 2, unemployed.

Prediction of Employment Outcome

Prediction of the employment status case outcome of blind clients served by state vocational rehabilitation agencies was accomplished through discriminate function analysis with moderate accuracy. Blind persons closed in the homemaker group (NW 1) were correctly classified 84 percent of the time and more often correctly classified than the other work status groups members. With a 78.5 percent correct classification rate, blind persons closed in the competitive labor market (WE 1) were the second most accurately classified group. Of persons closed as employed in a sheltered workshop setting, 46.7 percent were correctly classified. Cases closed unemployed (NW 2) were the least successfully classified (41.2% correct). For all groups, an overall correct classification rate of 68 percent was achieved. This rate is a 272 percent improvement over the expected or chance rate of 25 percent correct.

The aim of the study was to assist administrators of rehabilitation agencies serving blind clients in linking client characteristics, services provided, and employment outcome. The overall correct classification rate of 68 percent achieved through the discriminate analysis procedure suggests some important relationships between employment outcome broadly defined and client characteristics and services provided. It also indicates that correct prediction rate may be further substantially increased by data that may not be available in case records. Other factors which may increase correct prediction rate include personality factors such as client motivation, family support for the rehabilita-

tion program of the blind client, and data which relate to the daily changes in visual functioning experienced by some visually impaired persons. Such data are typically not available in case records.

The percent correct classification rate did vary considerably among the four outcome groups. This variation of classification rate among the groups demonstrates that some services, client characteristics, and other factors are more closely related to the employment outcome of one group than of another group.

Homemaker outcome group classification. The most accurately classified cases were those closed as homemakers, or Non-Wage Earner 1. The achieved correct classification rate of 84 percent suggests that this outcome group differs considerably from the other groups. This group had a later onset of blindness. It is, therefore, likely that this group can be expected to benefit from agency services which assist them in learning to function as blind homemakers. The services this group of blind persons requires are likely to be those provided blind persons in adjustment facilities. The expenditures for personal and vocational adjustment training for the homemaker group demonstrate how the resources of an agency might be used in providing services for rehabilitating blind people as homemakers. Agencies which serve large numbers of blind females with late onset of blindness need to anticipate allocating substantial financial resources for the kinds of adjustment services this group requires.

Competitively employed outcome group classification. The achieved correct classification rate for the Wage Earner 1 group, the competitively employed, was 78.5 percent. The results suggest that there are sets of preservice characteristics which are indicative of competitive employment outcomes. Additionally, the results point out that preservice characteristics and services

interact in ways which lead to competitive employment outcomes. For example, a blind person whose onset of blindness occurred during late adolescence and who has no additional disabilities can reasonably be expected to be closed in a competitive employment situation if the client receives institutionally based training. Therefore, if an agency's goal is to increase competitive employment closures, then one strategy which might be used is to increase its percentage of referrals of blind people whose onset of blindness is during adolescence, who have no other disabilities, and who are appropriate candidates for institutionally based training. Also, managers of rehabilitation agencies might wish to examine closely those active cases with these kinds of preservice characteristics which have vocational goals that are not compatible with competitive employment outcomes.

Sheltered employment outcome group classification. The percent correct classification result for the sheltered workshop group was 46.7 percent. The lower percentage correct achieved relates both to the relatively small sample of cases closed in this category and to the heterogeneity of the group. Slightly over 43 percent of this group were misclassified: 23 percent (N = 14) as homemakers and 20 percent (N = 12) as unemployed cases. Among the factors likely to have contributed to the statistical misclassification of the sheltered workshop closures as homemakers were the lack of differences between the occupational goal skill level (TVQ) at the first IWRP, the amount of institutional training received, the amount of expenditures for hospital convalescence, receipt of SSDI during the rehabilitation process, and the number of occupations held prior to referral. It is also likely that those persons (N=13) closed in homebound industry had more in common with the homemakers than the sheltered employment group.

Included among the factors related to the statistical misclassification of the sheltered workshop closures as unemployed were the lack of differences between the proportion of males and females in both groups, source of support at referral, distance in miles from the vocational rehabilitation counselor's office, the proportion of clients who received physical restoration services, the number of additional disabilities, the proportion of clients who received maintenance, the proportion of clients who received SSDI during the rehabilitation process, the number of months from the client s previous occupation to referral, the number of months the client was employed in the last job prior to referral, and marital status.

The mix of similar preservice client characteristics, vocational rehabilitation process variables, occupational variables, and geographic factors which the sheltered workshop outcome cases share with the homemaker and unemployed outcome cases indicates that the sheltered workshop cases are quite varied. Because of this heterogeneity, the establishment of sheltered workshop employment as a vocational goal for a blind or visually impaired person requires careful consideration. In addition, the factors which statistically differentiate these cases from the others are ones which appear to indicate that sheltered employment outcomes include rehabilitation programs focusing on an upgrading of employment relevant skills. Over half of this group (N = 35, 55.6%) received non-institutional training, primarily on-the-job training in a sheltered workshop.

The significantly higher expenditures ($2746 per case on the average) for personal vocational adjustment services indicate that upgrading of the employment relevant skills through personal and vocational training--often in a non-institutionally based training setting--requires substantial financial

resources. A clue to the reasons for this cost may be found in Tables 13 and 19. Almost three-fourths of the sheltered workshop group had a second disability, and one-third had a third disability. The leading second and third disabilities were mental retardation. The retardation, in combination with the low mean number of years of education (8.2) of the group, suggests that considerable time and resources must be allocated in assisting this group of blind people to become wage-earners in either competitive or sheltered situations.

The cases in the sheltered workshop outcome group at referral lived an average of 21.4 miles from a sheltered workshop--closer than any other group (e.g., WE 1 mean distance = 50.2 miles). It appears then that for certain types of clients, those with multiple handicaps and low educational levels, the location of sheltered employment is an important factor in the client's outcome. Inspection of the cases suggests that when sheltered employment is not available for these kinds of blind persons, the likely outcomes are unemployment or homemaker closures.

Unemployed outcome group classification. The lowest percent correct classification rate (41.6%) was achieved for the unemployed outcome group. Of this group, 25.7 percent (N = 38) were misclassified as that of a Wage Earner 1, the competitively employed group, and 27.7 percent (N = 41) were misclassified as homemakers, Non-Wage Earner 2. The unemployed group cases, therefore, have characteristics which are similar to those of cases closed competitively and cases closed as homemakers.

The unemployed cases were not significantly different from cases closed competitively in terms of the amount of funds expended for personal and vocational adjustment training and for hospital convalescence. Both groups were likely to have a large proportion of white males who were not

married at the time of referral. Both groups lived about an hour's driving time from the nearest sheltered workshop. Both groups had about the same proportion of group members who received SSDI and maintenance during the rehabilitation process. The two groups had similar occupational characteristics. Both groups had held approximately the same number of occupations at referral, and their length of employment in their last job prior to referral was not significantly different.

The unemployed group cases were not significantly different from the homemaker cases in terms of their reliance on "private sources" (sources other than family and friends or transfer payments) for support at referral. Receipt of SSDI during the rehabilitation process was not significantly different between the two groups. Differences between the two groups were not found for the proportion of members who received non-institutionally based training. The amount of funds expended for hospital convalescence was not different for the two groups. The two groups were also not different in terms of the number of occupations held prior to referral, the time in months from the previous job to referral, race, and distance in miles from nearest sheltered workshop.

The number of characteristics which the unemployed group members shared with those of the homemakers and competitively employed cases indicates that cases closed as unemployed probably had the potential for closure in either of those two wage earner categories. The question that becomes immediately apparent is why these cases had unemployment outcomes rather than Wage Earner 1 or Non-Wage Earner 1 outcomes. The unemployment outcome likely represents the influence of factors which were not taken into account in the analysis or which were not available in the data base. For example, the mean number of additional disabilities for the unemployed group (1.24) was not significantly different

from that of the homemaker group (1.38). What is not known from this count of non-eye disabilities is the effect of the additional disabilities on behavioral functioning. It could be that the homemaker group's additional disabilities impaired functioning less than the additional disabilities of the unemployed group. Changes imposed by diabetes mellitus, the most prevalent secondary disability for the two groups (See Tables 12 and 13), might have had fewer functional consequences for the homemaker than for a person whose vocational goal was that of competitive employment or sheltered employment.

More accurate overall classification of the employment outcomes requires an examination of how client characteristics, vocational rehabilitation services variables, and other factors interact with specific employment outcomes. Directions this process should take include re-examination of the disability and related behavioral functioning levels included in this study for each of the outcome groups and studies of subpopulations like the diabetic retinopathic blind, female blind, and older blind, for example.

First Twenty Predictor Variables Associated with Outcome

The prediction of Wage Earner status outcome requires a substantial amount of information about the blind person, the services the individual received from the agency, the providers of services, and geographic and environmental factors. Each of these sources of information contributed differently to the prediction of outcome. To provide a way of ordering the variable categories, mean discriminate step numbers for each grouping of predictor variables were calculated by averaging the step numbers (order of importance) for each variable within a group of predictors. Table 25 displays the categories of predictor variables ranked by mean step number of the variables in each category. As a group,

Table 25

Rank Order of Predictor Variable Categories

Rank	Variable Category	Variable	Discriminate Function Step	Mean of the Variable Step in Category
1	Vocational Rehabilitation Process	C11 Occupational goal TVQ at first IWRP	2	6.86
		E36 Expenditures for PAT-VAT training	3	
		R64A Received non-institutional training	8	
		R60A Received institutional training	9	
		R59 Received physical restoration services	10	
		R23 Expenditures for hospital convalescence	12	
		R67 Received maintenance	13	
2	Financial/ Disincentive	R33D Primary Support at referral = Other sources	5	9.5
		C1 Received SSDI during rehabilitation process	14	
3	Personal and Disability related	C2 Age at onset of blindness	1	10
		R9A Gender	4	
		R26 Highest grade completed	6	
		NDIS Number of additional disabilities	11	
		R13A Race	18	
		R23A Marital status	20	

Rank	Variable Category	Variable	Discriminate Function Step	Mean of the Variable Step in Category
4	Geographic and Environmental	C26 Proximity in miles to VR counselor	7	13
		C24 Proximity in miles to sheltered workshop	19	
5	Occupational History	NOCC Number of Occupations held prior to referral	15	16
		C15 Time in months from previous occupation at referral	16	
		C16 Length of employment in last occupation prior to referral	17	
6	Provider Characteristics	(None)		

variables in the vocational rehabilitation process category had the highest mean ranking. Personal and disability related factors as a group were ranked third. The step number ranges within the variable category groupings suggest that all variable categories are needed for predictive purposes and that the variables within the categories interrelate in the prediction process. This interrelation of predictor variables suggests that it may be difficult to isolate factors linked with specific employment outcomes that are related exclusively to the client or to the rehabilitation services delivery system. Further, the groupings suggest that administrators of agencies serving blind persons must attend to client characteristics, the quality and quantity of rehabilitation services delivered, disincentive factors, and geographic factors in developing state plans of services for blind and severely visually impaired persons.

Vocational Rehabilitation Process Variables

IWRP Vocational Goal. A major finding of this study is the contribution in the discriminate function analysis of the job difficulty level, as indicated by the TVQ, of the client s vocational objective at the first IWRP. Blind clients closed in competitive employment situations (WE 1) chose job goals with significantly higher job difficulty scores (TVQ) than any of the other three groups. The non-worker (NW 2) group mean TVQ score was significantly higher than that for both the homemaker and sheltered groups and significantly lower than the TVQ of the competitive group. Additional research is needed to ascertain the relationship of the chosen job goal difficulty variable with other factors in the outcome of the rehabilitation process.

In previous studies of renabilitation outcome, these kinds of occupationally relevant rehabilitation process variables have not been quantified. This lack of quantification has denied the field a method to assess the contri-

bution of one of the major events in the rehabilitation process leading to the client's employment outcome. The importance of the job difficulty level associated with the IWRP vocational objective is underscored by the step at which it was entered by the stepwise discriminate analyses. The job difficulty variable (C11) is entered at step 2 (See Table 22). Its entrance at step 2 indicates that it has considerable utility in discriminating among the four wage earner outcome groups.

Because of its importance in the discrimination process, the IWRP vocational goal skill level (TVQ) is a factor which merits the attention of rehabilitation counselors and administrators. The highest group mean TVQ score (61.2) was that of the competitively employed group. It was significantly different from the mean TVQ scores of the other three groups (See Table 24), and 4.2 points higher than the mean TVQ score of all jobs listed in the DOT (U.S. Department of Labor, 1977). McCroskey and Perkins (1981) identified 7573 DOT job titles with TVQ scores equal to or less than the mean TVQ score of the competitively employed group. Use of the TVQ score as a tool to identify employment options for disabled people has been reported by McCroskey and Perkins (1981).

Additional research is needed, however, to determine usefulness of the McCroskey and Perkins system with blind and severely visually impaired people since this approach is based on job analyses which are of questionable accuracy regarding the vision requirements of the job. The system also does not take into account job modifications and sensory aids which facilitate the job task performance by the blind person.

Personal-Vocational Adjustment Training. Crouse (1974) has reported that receipt of personal adjustment services was a useful predictor of rehabilitation

outcome. In this study PAT/VAT expenditure was significantly greater for the sheltered employment group than for any other group. The other groups, non-worker, homemaker, and competitive, were not significantly different from one another. Large expenditures for these services appear to be associated with sheltered employment outcomes.

Rehabilitation administrators, in anticipation of the increasing number of multihandicapped blind persons entering the system, need to plan on allocating considerable agency resources to assist the multihandicapped blind client become a wage earner. The relative youth of this group suggests that investing agency resources in service plans targeted to meet their employment needs will have long term personal and socio-economic benefits. It should be noted that other outcome groups had expenditures for personal and social adjustment training and, therefore, having these kinds of service available to all blind people who need the kind of services broadly categorized as PAT/VAT is necessary. The issue is that additional funds will need to be set aside to meet the personal and vocational adjustment training needs of blind multihandicapped persons.

Institutional and Non-Institutional Training. Training has been found to be indicative of successful rehabilitation outcome (Bowman & Micek, 1973). Previous studies like the Bowman and Micek (1973) study have not examined the relationship between training category and specific employment outcome, nor were the studies focused on the effect on outcome of the training with blind clients.

Non-institutional training (on-the-job or vocational training at miscellaneous sites) was more likely to be associated with wage earning outcomes than non-wage earning outcomes. Blind persons closed in sheltered employment were more likely to receive non-institutional training than the other three work sta-

tus groups. Individuals in the competitively employed outcome group were more likely to receive non-institutional training than the unemployed group.

A minority (111 or 17.9%) of the cases received institutional training. Institutional training includes college or other academic training, business school, or vocational school training. As expected, significantly fewer homemaker (2.9%) and sheltered employment closures (7.9%) received institutional training than either the competitively employed (33.7%) or the unemployed (21.3%) outcome groups. Significantly more of the competitively employed outcome group than of the unemployed outcomes group received institutional training.

An examination of Tables 26, 27, 28, and 29 points out the need for additional research into the relationship between type of institutional training and the specific wage earner status outcome. For example, in Table 26 it is shown that 43 (21.1%) of the WE 1 group received college training and 19 (12.7%) of the NWE 2 received college training. These percentages may be contrasted with the results in Table 29, where it is shown that 22 (10.9%) WE 1 cases and 7 (4.7%) NWE 1 cases received vocational training. Why there were proportionally fewer unemployment outcomes among the cases receiving vocational training than college training is not clear. However, since the resource absorption rate of the two kinds of training is different, additional study is needed to determine how both kinds of training might be most effectively utilized in the rehabilitation process.

Physical Restoration and Hospital Convalescence. Crouse (1974) found that receipt of physical restoration services was related to rehabilitation outcome. The results of this study are consistent with those of Crouse (1974). The nonworker group and the sheltered group were less likely to receive physical

Table 26

College Attendance

Attended College	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
No	159	78.7	60	95.2	202	99.0	131	87.3	552	89.2
Yes	43	21.3	3	4.8	2	0.9	19	12.7	67	10.8
Total	202	100	63	100	204	100	150	100	619	100

Table 27

Other Academic Training

Other Academic Training	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
No	191	94.6	63	100	200	98.0	145	95.3	597	96.4
Yes	11	5.4	0	0.0	4	2.0	7	4.7	22	3.6
Total	202	100	63	100	204	100	150	100	619	100

Table 28

Business School Attendance

Attended Business School	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
No	197	97.5	62	98.4	202	99.0	149	99.3	610	98.5
Yes	5	2.5	1	1.6	2	1.0	1	0.7	9	1.5
Total	202	100	63	100	204	100	150	100	619	100

Table 29

Receipt of Vocational School Training

Attended Vocational School	Wage Earner Status at Closure									
	Wage Earner I		Wage Earner II		Non-Wage Earner I		Non-Wage Earner II		Total	
	N	%	N	%	N	%	N	%	N	%
No	180	89.1	62	98.4	203	99.5	143	95.3	588	95.0
Yes	22	10.9	1	1.6	1	0.5	7	4.7	31	5.0
Total	202	100	63	100	204	100	150	100	619	100

restoration services and were not significantly different from each other. The competitive and homemaker groups were more likely to receive physical restoration services but were not different from one another. The homemaker group was more likely to receive services than either the non-worker or sheltered groups, and the non-worker group was less likely to receive services than either the competitive or homemaker groups (See Table 24, Variable R59). While the groups did not differ statistically on expenditures for hospitalization, it was a variable that entered the stepwise discriminate analysis at step 12 (See Table 22). The mean amount spent for hospital convalescence is modest for each of wage earner outcome groups. The range of the means is from $45 (WE 2) to $195 (NWE 1).

The results suggest that administrators of rehabilitation agencies can anticipate that slightly under half (46.7%) of the cases will require physical restoration services and that the hospital convalescence cost will be relatively low on a per case basis. More competitively employed and homemaker outcome groups were found to have received these kinds of services than either of the other outcome groups. Because the WE 1 and WE 2 groups share an average onset age of blindness during adolescence, further study is needed to determine why there are differences in the rates at which physical restoration was received by the two groups and, more importantly, why receipt of the service was more often associated with a competitive closure than with a sheltered employment closure.

Financial and Disincentive Variables

Source of Support at Referral. Client financial resources at referral have been found to be associated with rehabilitaiton outcome in previous research (Scheinkman, Dunn, Menz, Andrew, & Currie, 1975a; Bolton, 1972a; DeMann, 1963).

Presence of personal income at referral such as current earnings, workman's compensation, and private annuities, rather than transfer payments or family and friends was associated with competitive employment closures. Of the WE 1 outcomes, 24.3 percent had support from these sources at referral. Over 90 percent of the other three groups relied on non-personal sources of support at referral, such as transfer payments.

While personal sources of support at referral was associated with competitive employment outcomes, it should be noted by those involved in the rehabilitation of the blind community that over three-fourths of the closures in this group received their financial support at referral from non-personal sources. That such a large percentage of the competitive employed closures were financially dependent at referral suggests that some of the financial disincentives often cited as a rationale for the lower rates of competitive employment closures among blind clients may not be as strong a justification as previous research (e.g., Walls & Tseng, 1976) has indicated.

Receipt of SSDI During the Rehabilitation Process. Slightly over one-third (N = 227; 36.7%) of the cases received SSDI during the rehabilitation process. This relatively low rate is likely because a large number of the cases had not worked enough quarters to be eligible for SSDI benefits. While the differences among the groups were not significant, the percentages of each group receiving SSDI during services were in the expected direction: competitively employed - 31.2%; sheltered employed - 33.3%; homemakers - 37.8%; and unemployed - 44.0%.

Personal and Disability Related Variables

Age at Onset of Blindness. Age at onset of blindness has been reported by Knowles (1969) to be related to the rehabilitation outcome of blind cases.

Earlier onset ages were found to be associated with wage earner outcomes. The latest age of onset ($\underline{M}$ = 46.7) was associated with the homemaker outcome. Between the homemaker group and the two wage earner groups were the unemployed outcome group cases, which had an average onset age of 28.1 years.

The results from the onset data suggest that persons whose onset of blindness occurs while the individual is age appropriate for the educational system learn skills which assist them to enter the world of work. Persons who become blind after age 22 and prior to middle age do not often have the opportunity to learn, practice, and acquire proficiency at those skills taught to blind youth in the educational setting which have the potential for transferability to the employment setting. However, because this group is still young enough to have wage earner vocational goals, vocational rehabilitation plans or IWRP's are often developed since they appear to be age appropriate and in concert with the goals of the agency and the blind person. Investigations are needed to determine what services are required to assist these individuals in achieving a wage earner outcome closure.

The homemaker group had an average onset age of blindness during their late forties. These older persons had an employment history ($\underline{M}$ = 1.61 different occupations; 20.9 years work history in the last job prior to referral). Most were not working, were living in their home at referral, and had not performed homemaking duties for over three and one-half years ($\underline{M}$ = 43.2 months). Investigations are needed to determine the interactions among age at onset, occupation history variables, visual and non-visual disabilities, and the homemaker outcome closure.

Gender. Prior studies (Scheinkman, et al., 1975a; Bolton, 1972a; Wright & Trotter, 1968) have indicated that successful rehabilitation or status 26 out-

comes were more often associated with males than with females. In contrast with the other studies, gender differences were not indicative of closure in status 26. There were no differences in the distribution of males and females in WE 1, WE 2, and NWE 2 categories. NW 1, the homemakers group, traditionally categorized as a 26, contained a higher proportion of females than the other three groups. Because of the prevalence rate of blindness among females (National Society to Prevent Blindness, 1980), additional studies are needed to examine the effects of the rehabilitation service delivery system on the employment outcome of blind women.

Educational Level. Educational level was recorded in terms of highest grade completed. All groups were significantly different on this variable. The order of groups from lowest to highest was sheltered, homemaker, non-worker, and competitive (highest). While most previous research (Berkowitz, Englander, Rubin, & Worral, 1975) indicates that a higher educational level is associated with successful closure, the present results suggest that the pattern is not consistent across successful closure categories. In the present study, the NW 2 group, status 28, was found to have an average educational level of 10.5 while the WE 1 (competitive employment) group reported 11.3 years. However, if the categories are collapsed using the traditional 26-28 system, the mean educational level of the 26 group (NWE 1, WE 1, and WE 2) is approximately 10.2 while the 28 group (NW 2) was 10.4 years, which could have been interpreted that more education is associated with unemployment among blind persons or that education does not matter. Using the broader categories of status 26 and 28 may therefore obscure important subpopulation differences as Dunn (1975) has suggested and may lead to inappropriate conclusions about the effects of various elements of the rehabilitation service delivery system on benefits clients receive from the services.

Number of Additional Disabilities. All cases included in the present study are considered by RSA criteria to be persons with severe disabilities. Consequently, additional disabilities could have significant implications for behavioral functioning. Previous research (Scholl et al., 1969) has been reported which suggest that additional non-visual disabilities are associated with lower socio-economic status, percentage of time worked, and lower income. The results of the current study, through identifying secondary and tertiary disabilities, indicate that fewer additional disabilities are associated with competitive employment outcomes. Conversely, additional disabilities were found to be associated with the other outcome categories.

The homemaker outcome group had on the average 1.38 additional non-visual disabilities. Given that this is the oldest group, it is the group most likely to have disabilities associated with aging. In Tables 12 and 13, it can be seen that the principal secondary and tertiary disabilities are ones associated with the aging process. It can also be expected that this group will need physical restoration services. Slightly over 57 percent received some form of physical restoration services, with an average hospital convalescence expenditure of $195.00. The relatively high percentage of cases receiving physical restoration services with a relatively low hospitalization cost suggests that some of the costs for these were shared by a third party. Administration agencies serving large numbers of persons who are likely to be closed as homemakers can expect that the provision of physical restoration services will be a frequent agency service. It is one, however, where third party cost sharing can be expected. Counselors serving this type of client need to know how to use third party sources to reduce the cost of the IWRP for this group of agency clients.

Race. For non-visually impaired disabled persons, race has been reported to be associated with rehabilitation outcome (Berkowitz et al., 1975; Hammond, Wright, & Butler, 1968; Kunce, Miller, & Cope, 1974; Scheinkman, Menz, Andrew, Currie, & Dunn, 1975b; Walls & Tseng, 1976). Race was associated with only one of the four outcome groups in the current study . The sheltered workshop outcome group had 28 cases (44.4%). This group included the highest proportion of non-whites in any of the outcome groups.

Non-white persons have a higher visual impairment rate than whites (Kirchner & Peterson, 1979). The higher rate of visual disabilities does not explain the higher proportion of non-whites closed in sheltered employment settings. A more likely explanation is that because non-whites historically have had fewer years of education and less access to employment opportunities, either as a result of discrimination or skill deficits, sheltered employment represents an employment opportunity for a non-white client when other opportunities have been or are closed.

Marital Status. Kirchner and Peterson (1982) report, "Persons closed as homemakers were more likely to be currently or formerly married than persons in the other work types (p. 427)." The results of the present study support these findings.

Geographic and Environmental Variables

Variables contributing to correct classification in this category were Proximity to VR Counselor (entered at step 7), Proximity of Nearest Sheltered Employment (entered at step 19), and Unemployment Rate in County of Residence 2 Months Prior to Closure (entered at step 26). The last variable, although not in the top twenty predictors, was selected from the predictor list because it is of special interest in this study and is related to prior research.

Proximity to Counselor Office. Proximity in miles of the rehabilitation counselor's office to the home of the blind client and its relationship to outcome has not been examined in previous research. This variable is important for blindness agencies given the low prevalence of the disability and the dispersion of clients within the state. Proximity to VR Counselor showed that clients most likely to be closed in the non-worker group were those residing closest to the counselor ($\underline{M}$ = 13.0 miles). The sheltered workshop outcome group at 18.1 mean miles did not differ significantly from the unemployed group. The unemployed group did differ significantly from the homemaker ($\underline{M}$ = 21.1 miles) and the competitive groups ($\underline{M}$ = 21.2 miles). Possible explanations for the finding include (1) the rural/urban dimension interacts with service delivery and need patterns, (2) case selection by the counselor is more important when greater travel distances are involved, (3) multihandicapped blind persons may be prohibited from access to rehabilitation services when significant travel is involved, and (4) referral systems function differently when the rehabilitation counselor is located in close proximity.

Proximity to Sheltered Workshop. Proximity to Nearest Sheltered Employment, also not previously investigated, showed that clients most likely to be closed in the sheltered employment group were those residing closest to a sheltered employment facility. There were no significant differences among the other groups. The close availability of sheltered employment may influence both counselor and client to gravitate toward this type of closure.

County and SMSA Unemployment Rate. Levitan and Taggart (1977) suggest that the higher the unemployment rate, the greater the likelihood of a 28 closure. Kirchner and Peterson (1982) report that unemployment rate and the annual rate of homemaker closures have comparable patterns. The current status of the labor

market can be expected to impact on employment outcomes, but this factor has not been systematically investigated in rehabilitation outcome studies with blind persons. Unemployment Rate in County of Residence 2 Months Prior to Closure was a significant discriminating variable but did not enter the equation until step 26. Lower unemployment rates were associated with the non-worker and competitive groups. The non-worker group, but not the competitive group, was significantly lower than the homemaker or sheltered groups. Higher unemployment rate appears to be related, as expected, to sheltered and homemaker closures. These findings for FY 78, 79, and 80 are, therefore, supportive of the Kirchner and Peterson (1982) analysis for the period from 1970 to 1981.

As expected, lower unemployment rates were associated with competitive closures, but surprisingly, so were unemployment closures. Perhaps when the employment picture is relatively good (lower unemployment rates), counselors may not work as hard for placements, resulting in an increase in 28 closures. It should be noted that these findings are in contrast to Levitan and Taggart (1977).

Unemployment rate was found to be related to outcome. However, it does need to be pointed out that the unemployment predictor variable was not a particularly potent discriminating variable. Characteristics of the blind clients and the rehabilitation service delivery system were better predictors of outcome. This finding suggests that while unemployment rates are important, agency services and blind client characteristics can be used in the IWRP in ways which facilitate competitive employment outcomes. Studies are needed, however, which identify reasons for the unemployment closures to be associated with lower rates of unemployment.

Occupational History Variables

As a group, the occupational variables have attracted relatively little

attention in previous research. One likely reason for this has been the difficulty of acquiring the information. It is, for example, not data recorded on the R-300 form. It must be abstracted directly from the case record and often from several sources within a single record. Given the importance rehabilitation agencies place on competitive employment placements, attention needs to be paid in the casework supervision process to the consistent collection of employment histories from blind clients.

Number of Occupations Held Prior to Referral. No differences were found among the groups in terms of the number of occupations held prior to referral. In each group, the mean number of jobs held exceeded one (See Table 24). As expected, the competitively employed group had held the most jobs prior to referral ($\underline{M}$ = 1.63) followed by the homemaker group ($\underline{M}$ = 1.61). The job count credit given for homemakers included homemaking. Therefore, the homemaker mean includes both non-homemaking and homemaking jobs. Similarly, if cases closed in any other work status had a homemaker position prior to referral, it was counted as a job, assigned a DOT number and a TVQ score. Future investigations are needed which examine the relationships or interactions of type of employment, type of vocational goal, and rehabilitation outcome especially for the homemaker outcome group.

Time in Months from Previous Occupation to Referral. Significant amounts of research literature (e.g., "New Study," 1983) suggest that early intervention facilitates positive rehabilitation outcomes. While the results of this study illustrate that competitive employment outcomes are associated with shorter periods of unemployment, the periods of time between the previous employment and referral are alarmingly long for each of the wage earner outcome groups. Homemaker closures, for example, had a mean period of unemployment prior to

referral of 43.2 months (See Table 24).

Early identification and referral of blind clients to rehabilitation agencies can assist in reducing the period of unemployment prior to referral. However, it is an area in the blindness field about which there is little information. Bagley, Cook, Graves, Hagedorn, and Moore (1983) report no studies or evaluations of models to enhance the identification and referral of blind clients. The need for these kinds of studies is underscored when it is seen that the group with the shortest period of unemployment, WE 1, had a period of unemployment of 8.54 months. Administrators need to invest agency resources in earlier identification of blind persons in need of services so that dependency behaviors, which make the achievement of the competitive employment goal more difficult, will not become established.

Length of Employment in Last Occupation Prior to Referral. As a group, the blind cases sampled had stable work histories. The competitively employed group worked 9.34 years on the average in their last job prior to referral. The sheltered workshop closure group had a mean of 9.36 years in their last job prior to referral. The unemployment group had worked an average of 12.3 years. The homemakers had a 20.9 average number years worked in their last job prior to referral. Only the homemaker group differed significantly from the other groups on this variable. This difference is probably attributable to counting years of employment as a homemaker.

While additional studies are needed to gain a better understanding of the interactions between length of work history and specific outcome, it must be noted that many blind clients come into the agency with employment histories. Good rehabilitation practice mandates that the employment assets be used in the development of the IWRP. Counselors need training in how to use the job skills

blind clients gained in their previous employment in the development of rehabilitation and job placement plans. Blind clients frequently will need assistance in learning and understanding how their present job skills may be transferred to another job and how to accomplish their job tasks through non-visual techniques. Occupational skills transfer ability and job task accomplishment through the use of alternative techniques training are areas of training frequently needed by rehabilitation professionals and blind consumers.

Provider Characteristics

No provider characteristics, either years of experience or training, were found to be successful classifiers of the work status outcome of legally blind clients of state rehabilitation agencies. There are, perhaps, several reasons for this result. In the current study, the only provider information recorded was experience and educational data about the rehabilitation counselor who signed the closure statement. The procedure and limitations established for collecting these data may not have given the most accurate picture of the counselor's contribution to the case. A person may have been the client of more than one rehabilitation counselor. The rehabilitation counselor who closed the case may not have participated in the development of the IWRP. Given the importance of the first IWRP vocational goal as indicated by the discriminate analysis, it is likely the data about this rehabilitation counselor are more important than data about the rehabilitation counselor who closed the case. Also, in some instances, there were more professionals for example, orientation and mobility instructors and rehabilitation teachers involved than just rehabilitation counselors providing rehabilitation services. The data collected did not permit the analysis of the contribution of other rehabilitation professionals to the outcome of the cases.

It is recommended that studies be undertaken which investigate the contribution of various rehabilitation professionals to rehabilitation outcome. Care needs to be taken to record such information as case personnel turnover, points during the process at which turnover occurred, setting of the delivery of service, and type of professional services provided.

Other Variables

In Table 3 is a list of candidate predictor variables. From this list only 52 variables were selected in the step-wise discriminate analysis (See Summary of Step-Wise Discriminate Analysis, Appendix C). Included in this list are several variables which have been reported in previous research to be predictive of outcome. Other variables such as intelligence quotient, which have been reported in previous literature (Scholl et al., 1969) to be related to outcome, were not included in the discriminate analysis. When a variable does not enter in the stepwise discriminate analysis function, it is interpreted to mean that the information in that variable contributes little or nothing to the discrimination process.

There were several differences between the results of this study and results of other studies. These findings may be due to differences in outcome criteria, statistical techniques, and sample differences, among other factors. It is important that consistencies between this study and others be pointed out, especially since the consistencies relate to services unique to the blindness rehabilitation delivery system. Consistent findings include those related to age at onset, educational level, secondary disability presence, sex, marital status, and mobility and orientation training (Crouse, 1974; Kirchner & Peterson, 1982; Knowles, 1969; Scholl et al., 1969).

Percent Visual Efficiency Loss

For each case a percent visual efficiency loss was calculated; the overall mean percent visual loss was 93.9 percent. There were no statistically significant differences in the mean percent loss among the four outcome groups. The means were WE 1 = 92.9%; WE 2 = 94.5%; NWE 1 = 92.9%; and NWE 2 = 94.4%. This variable entered the prediction equation at step 41, which indicates it had relative low value as a classifier.

Receipt of Orientation and Mobility Training

Orientation and mobility training was received by 236, or 38.1 percent, of the cases in the study. There were no differences among the groups in terms of the percent who received these services. Entering at step 23 in the discriminate analysis, it did, however, have usefulness in the classification process.

Receipt of Low Vision Training

Previous studies have not examined the contribution of low vision training to rehabilitation outcome. One likely reason for this omission is the relative newness of the service. Almost 19 percent (N = 117) of the sampled cases received low vision training. Entering at step 31 and exiting at step 52, the variable was not a particularly potent predictor. Nevertheless, there were significant differences between the groups in the numbers who received LVA training. Competitively employed cases (N = 53; 26.2%) received LVA training more often than the other groups. However, the competitively employed and sheltered workshop group (N = 11; 17.5%) did not differ significantly, but the competitively employed group differed significantly from the homemaker (N = 34; 16.7%) and unemployed (N = 19; 12.7%) groups. The sheltered outcome group did not differ from either the homemaker or the unemployed outcome groups.

It should be noted that while LVA training did relate to outcome, provision of optical aids did not; that is, it did not enter into the discriminate analysis. More extensive studies are needed to ascertain the relationship between the provision of LVA training and optical aids and rehabilitation outcome. The current study, for example, could not assess the quality of LVA services or describe the types of LVA training received since the data were not recorded in the casefile.

Nonoptical Aids Provided

Entering at step 44, provision of nonoptical aids was a variable with relative low potency. Of the 619 cases sampled, 90 cases, or 14.5%, received nonoptical aids. The kinds of nonoptical aids received included adaptive sewing aids, canes, and computers with synthetic speech. The four groups did not differ significantly with regard to the rate at which nonoptical aids were received. The percentages of each group that received aids are as follows: competitive = 12.4%; sheltered employment = 11.1%; unemployed = 14.0%; and homemakers = 18.1%.

Number of IWRP Goal Changes

The number of IWRP vocational goal changes entered at step 46 of the discriminate analysis. This variable was included in the analysis to provide an index of vocational goal certainty. The results of this analysis point out that homemaker closures are the group which had the fewest IWRP goal changes; this was a statistically significant difference between the homemaker and all other groups. Sheltered workshop and unemployed outcome cases did not differ on this variable. The competitive group, which had the largest mean number of changes (.718), differed significantly from the homemaker group (.196) and the

unemployed group (.447), but not from the sheltered group (.651). It appears, therefore, that wage earner closures, that is, the sheltered and competitive outcomes, require significantly more counseling time than homemakers do because of the need to establish and re-examine the blind client's vocational goals. Agencies which have as a goal increases in competitive employment closures are likely to have to provide more time for the rehabilitation counselor and blind client to develop and monitor the appropriateness of the vocational goal of the client. To facilitate appropriate goal choices, it is important that the rehabilitation counselor be aware of the vocational choice process. In-service and pre-service training programs need to include vocational goal development in case management training exercises and curriculums.

Implications

Certain characteristics of blind persons, types of vocational rehabilitation services, occupational factors, and selected geographic factors were found to be associated with different employment outcomes for blind and severely visually impaired clients of state rehabilitation agencies. These results have implications for policies of state rehabilitation agencies and the delivery of rehabilitation services by state rehabilitation agencies affecting the employment and underemployment of blind and visually impaired clients of these agencies.

Policy Issues

1. The variations of the four outcome groups in terms of client pre-rehabilitation entry characteristics, vocational rehabilitation services received, occupational histories, and geographic factors indicate that the traditional 26-28 closure dichotomy obscures important differences among blind

clients. To evaluate the effectiveness and efficiency of a rehabilitation agency serving blind and visually impaired persons, more specific rehabilitation outcome criteria must be used. At a minimum, it is recommended that a rehabilitation outcome criterion be used which is based on the client's employment setting at closure. The employment setting should include, at a minimum, competitive employment closures, sheltered employment, and homemaker settings as well as non-working or unemployed closures. Self-employed and business enterprise program closures may be included among the competitive closures or examined separately if numbers warrant. Unpaid family workers may be included with homemakers or examined separately if there are sufficient cases for meaningful analyses.

2. The relatively large proportion of cases (22.5%) whose legal blindness at referral was associated with cataracts indicates that physical restoration services, optical aids, and related services can be expected to continue as major services of state rehabilitation agencies. The frequency of the provision of these kinds of services may be expected to increase with the aging of the U.S. population.

3. All cases in the current study are considered by RSA criteria to be persons with severe disabilities. Consequently, additional disabilities could have significant implications for behavioral functioning. The results indicate that the presence of a secondary or tertiary non-visual disability reduces the likelihood of a competitive employment closure. Because an increasing number of blind and severely visually impaired persons have disabilities in addition to the visual disability, it is important that case management procedures be initiated which identify secondary disabilities and specify in the development of the IWRP how their impact on role performance will be eliminated or minimized.

4. Diabetes mellitus was the most frequently reported non-visual disability or secondary disability of the sample (N = 112; 18.1%). Few cases were observed to include documentation of comprehensive diagnostic evaluations, medical rehabilitation or treatment programs, or other diabetic supportive services. Because these kinds of services are likely to minimize the impact of diabetes mellitus on the role performance of the diabetic blind client, policies are needed which assure that the total rehabilitation needs of the client are being met. For example, an agency may elect to require that a form be completed for every applicant whose medical history includes diabetes mellitus. Such a form would assure and document that medical and related services are provided that minimize or control the effect of diabetes on the behavioral functioning of the diabetic blind client, whether such services were provided through a third party or at agency cost.

5. The effect of the rehabilitation process on the blind client has generally been measured in terms of whether or not the case was closed as a 26 or a 28 and in terms of weekly earnings at closure. This kind of information is valuable and appropriate for administrators to use in program evaluation. However, it does not provide information on the kinds of occupations in which blind clients are employed. Results of this study show, for example, that when the occupational categories of those blind cases closed in competitive employment situations are compared with the distribution of the same occupation categories in the U.S. labor force, the distribution of the competitive cases and percent of U.S. labor force are similar. An administrator of a state rehabilitation agency can use data from the state census current population surveys to make similar comparisons.

6. The mean weekly wages at closure for the competitively employed

outcome group was approximately $129. Given that almost 30 percent of the competitive employment closures were in professional, technical, and managerial fields, this group's average weekly wage at closure is less than might have been expected. Agency administrators need to examine case closure notes carefully to be assured that the wages received by the competitively employed closure are comparable to those of non-disabled persons who are employed in similar positions and have similar work schedules.

7. The single most potent discriminating variable among the four outcome groups was age at onset of blindness. Later ages of onset were found to be associated with homemaker and unemployed closures. Administrators need to include age at onset of blindness in the agency management information system data bank. Administrators could then relate age at onset and age at referral to case outcome. For example, if the data revealed that relatively few cases with ages at referral and ages at onset during late adolescence were being closed as wage earners, then the agency administrator might wish to review these kinds of closures to determine the reasons for non-wage earning closures.

8. IWRP vocational goal development was found to be an important predictor of case outcome. Vocational goals associated with more difficult jobs and more frequent IWRP vocational goal changes were found to be associated with competitive employment closures. If the goal of a state rehabilitation agency serving blind persons is to increase the number of competitive employment closures, then an agency will need to consider implementing case management policies and staff development programs which increase the effectiveness and efficiency of the vocational counseling of the rehabilitation counselor. For example, staff development programs can focus on transferability of job skills and techniques of goal oriented counseling. Case management policies can be

implemented which encourage the use of occupational histories in the case work process and focus the counseling interview on occupationally relevant behaviors. Case work supervisors might be instructed to determine if complete occupational histories are included in the case folder.

9. Race was associated with only one of the four employment outcome groups. The highest proportion of non-whites (44.4%) was found among the sheltered workshop closures. Administrators need to determine whether a sheltered workshop closure was appropriate for the non-white blind person in terms of the individual's intellectual, emotional, and physical functioning and that the closure did not represent racial stereotypes and expectations of either the provider or consumer of the state agency s services.

10. Proximity in miles of the blind client to the rehabilitation counselor s office and to a sheltered workshop was found to be related to employment outcome. Greater distances from the rehabilitation counselor's office were associated with competitive employment placements while closer distances were associated with unemployment or 28 closures. The blind clients most likely to be closed in the sheltered workshop employment group were those living closest to a sheltered employment facility at referral. Slightly over 43 percent of the cases sampled lived at referral within a five mile radius of the rehabilitation counselor. These data suggest that service delivery and case outcome are affected in part by these kinds of proximity factors. It is, therefore, recommended that caseloads be examined in terms of the zip codes (or some other system of geographic location) of the blind clients at referral to determine if there are areas or communities which appear to be underserved by the rehabilitation counselor assigned to that geographic region.

11. Occupational histories of blind clients provide important information

about the employment outcome of the case. However, occupational information was not consistently collected by the rehabilitation counselor. Policies need to be implemented which will assure that the case work supervision process attends to the consistent collection and use of employment histories in the rehabilitation counseling process.

12. The results indicate that competitive employment outcomes are associated with shorter periods between previous employment and referral. However, the periods of time between the last employment and referral were alarmingly long. Homemaker closure, for example, had a mean period of unemployment prior to referral of 43.2 months, and competitively employed closures had a mean unemployment of 8.5 months. Administrators need to invest agency resources in earlier identification of blind persons in need of services so that dependency behaviors will be less likely to become established and reduce the likelihood of a competitive employment closure.

Practice Issues

1. Many blind and severely visually impaired clients of state rehabilitation agencies have multiple visual disabilities. Cataracts and diabetic retinopathy appear to be the leading causes of blindness in this population. Therefore, rehabilitation professionals need to understand the etiology, procedures, and treatment for each of these types of diseases, as well as their associated non-visual disorders. In addition, knowledge is needed by rehabilitation professionals about the availability and uses of both optical and non-optical adaptive aids and devices that may be employed in the rehabilitation programs of persons blinded by cataracts or diabetic retinopathy.

2. The delivery of physical restoration services for blindness by cataracts is likely to be a frequent service of the rehabilitation counselor.

Rehabilitation counselors will need to be encouraged to arrange for the effective and efficient delivery of these services to shorten the period of unemployment between referral and receipt of the restorative services.

3. Rehabilitation counselors need to be encouraged to arrange for comprehensive medical diagnostic studies of the diabetic blind referral. The counselor needs to include in the IWRP services such as dietary counseling by appropriately trained personnel, which may ameliorate or minimize the effect of diabetes on the behavioral functioning of the blind client.

4. Rehabilitation counselors whose caseloads include a number of persons likely to be closed as homemaker can be expected to use a substantial amount of case service funds for physical restoration services. Also, those in the homemaker outcome group are likely to need the services of rehabilitation teachers and orientation and mobility specialists to facilitate their functioning as homemakers.

5. IWRP vocational goal development was an important predictor of case outcome. IWRP vocational goal development provides an opportunity for the rehabilitation counselor and blind client to review the client's work history and to use the work skills the client has acquired in the identification of the IWRP vocational goal.

6. With the increasing number of relatively young multihandicapped blind persons being referred to rehabilitation agencies, rehabilitation professionals are likely to need additional training in and knowledge of new technology. Such skills and knowledge can be used in vocational evaluation, vocational training, rehabilitation teaching, and orientation and mobility programs for this population. Without these kinds of resources, an unemployment outcome is more likely to be the result of the rehabilitation process.

7. Rehabilitation counselors need to become acquainted with specialized counseling and placement techniques for non-white blind persons. Personal adjustment training programs within rehabilitation adjustment centers are needed which will help blind non-whites overcome deficits that have developed because of previous lack of experience, opportunities, and expectations.

8. Occupational histories were found to reveal a number of important predictors of employment outcome. It was observed that occupational history data were not collected consistently by the rehabilitation counselor during the application process. Ways in which this kind of client information can be used in the vocational counseling process needs to be included in both pre-service and continuing education programs of rehabilitation professionals.

9. The blind cases sampled in this study had stable and relatively long work histories. Rehabilitation counselors need to use these employment histories to assist in the development of the IWRP. For example, some blind clients may need assistance in learning and understanding how their present job skills may be transferred to another job and in learning how to accomplish their job tasks through techniques which do not depend upon sight. Knowledge of occupational skill transferability and job task accomplishment are areas of training frequently needed by rehabilitation professionals and blind consumers.

10. Persons closed competitively employed changed vocational goals more often than those in the homemaker or unemployed closure groups. Rehabilitation counselors need to plan more vocational counseling interviews for blind clients who have vocational goals which may be classified as competitive employment than for those blind clients whose vocational goals may be classified as homemaker. An increased number of interviews will afford an opportunity for the rehabilitation counselor and blind client to develop and monitor the appropriateness of

the IWRP vocational goal.

11. Receipt of low vision training was associated with a wage earner case outcome, either competitive employment or sheltered employment. Provision of optical aids--including low vision aids--was not found to be a predictor of case outcome. While the relationship between the provision of LVA training and optical aids and case outcome is not clear, the findings suggest that when optical aids are purchased for severely visually impaired persons, low vision training should be considered for those persons for whom optical aids are indicated.

12. Rehabilitation counselors need to be encouraged to develop additional referral systems which identify blind persons more efficiently so that the time period between the blind person's last job and referral can be reduced. In addition, given the relative close proximity of the place of residence at referral of blind clients to their rehabilitation counselors (over 43% live within a five mile radius of the counselors), efforts need to be made by the rehabilitation counselor to identify additional sources of referral and to intensify case finding activities.

Suggestions for Future Research

Questions raised in the present study should help to guide subsequent research efforts in this area. Definitive answers for many of the issues must await carefully controlled experimental investigations and longitudinal studies. Others will rely on more extensive analyses of case records from both state rehabilitation agencies and direct service providers. Others will require more extensive follow-up services as well as consumer and direct service provider input.

The following list of suggestions for future research represents broad

areas for future study. Studies which focus on these issues can contribute substantially to the research literature and to an understanding of how the career development of blind persons is affected by rehabilitation services, characteristics of the blind person, environmental factors, and characteristics of the service provider.

1. The least accurately classified group of cases was the group classified as unemployed. Additional research is needed to understand why almost 25 percent of the blind and severely visually impaired cases were closed as unemployed. This is a particularly critical issue when it is recognized that the mean age at referral of this group was 40.2 (SD = 19.3) and that they were in the prime years of their work life.

2. A larger proportion of non-white blind persons than white blind persons were closed in sheltered employment positions. Research is needed to develop strategies which will assist blind non-white persons to overcome career skill deficits that have developed because of previous lack of experiences, opportunities, and expectations.

3. The impact of diabetes mellitus on the behavioral functioning of the diabetic retinopathic blind person needs to be investigated. The interaction of diabetes mellitus with ocular disease, occupational skill levels, vocational goals, rehabilitation services, and other non-visual disabilities needs to be more clearly understood.

4. Additional research is needed to determine the usefulness of job analysis systems, both those which permit use of job modifications and sensory aids in the system and those which report only the vision requirements, in the prediction of rehabilitation outcome.

5. More refined analyses of the contribution of orientation and mobility

services, rehabilitation teaching, and low vision training to rehabilitation outcome are needed. Information collected should include such data as numbers of lessons, types of lessons, and appliances/aids used and purpose.

6. Competitively employed and sheltered workshop group members had an average onset age of blindness during adolescence. Differences were found in the proportion of cases from the two group receiving physical restoration services. Additional study is needed to determine why, given the similar age at onset, the competitively employed group was more likely than the Sheltered employment group to receive physical restoration services.

7. The homemaker outcome group had a average age of onset of blindness during the late forties. These older persons have significant employment histories. Investigations are needed to determine the interactions among age at onset, occupational history variables, visual and non-visual disabilities and homemaker closures.

8. For blind persons, gender is not predictive of a 26 closure. Gender is, however, associated with the homemaker outcome. Because of the prevalence rate of blindness among females, additional studies are needed to examine the effects of the rehabilitation service delivery system on the employment outcome of blind women.

9. Proximity of the blind client's place of residence at referral was found to be related to case outcome. Because this is a dimension of the case services delivery process which has received little attention in prior research, it is important that additional studies explore how proximity interacts with the rural/urban dimension and client service needs; how case selection is affected by proximity, the interaction of accessible public transportation and proximity and outcome; and how referral systems function in relationship to the proximity

variable.

10. County and SMSA unemployment rate 60 days prior to closure was not as strong a predictor of rehabilitation outcome as were 25 other variables in the study. Lower unemployment rates were found to be associated with competitive employment and unemployment outcomes while higher rates of unemployment were found to be associated with sheltered and homemaker closures. Additional studies are needed which examine the relationship of local labor market conditions and unemployment rate to rehabilitation outcome, especially unemployment outcomes.

11. Much research literature suggests that early intervention facilitates positive rehabilitation outcome. Results of this study suggest that this is an area of concern for state rehabilitation agencies serving blind people. There is little information available from which to develop strategies for the early identification and referral of blind clients to state rehabilitation agencies. Research and demonstration projects are needed to fill this gap in the rehabilitation services delivery research literature.

12. No provider characteristics, either years experience or training, were successful predictors of the work status outcome of legally blind clients of state rehabilitation agencies. It is recommended that studies be undertaken which investigate the contribution of various rehabilitation professionals to rehabilitation outcome. Variables which need attention include case personnel turnover, points during the case at which turnover occurred, setting of the delivery of service, and type and quantity of service provided.

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APPENDICES

APPENDIX A

FUNCTIONAL OUTCOMES CODING FORM

Mississippi State University
Rehabilitation Research and Training Center
in Blindness and Low Vision

(FOCF)

Proceed sequentially through this form, recording data in the spaces on the right side of the form. The data entries will be numerical. If data are missing or unknown, code 9's in each square unless directed otherwise.

I. R-300 Case Service Report

Variable	Location	Item	Verification Source
		Card One RTC#	
R1	1.A.1. (top left)	Case Number (right justified)	-
R2	1.A.2. (top left)	Agency Code* City:_____ Client:_____	-
R3	1.B.1.	County Code* ____ Name County:_____	
R4	1.B.2.	Zip Code	-
R5	1.C.	Referral Date	-
R6	1.D.	Referral Source*	-
R7	1.E.1.	Age at Referral _____	
R8	1.E.2.	Date of Birth	-
R9	1.F.	Sex*	-
R10	1.G.	Disability as Reported* Comment: For M.S. "14X" is coded 1499	-
R11	2.B.	SSDI Status*	-
R12	2.C.	SSI Status*	-

*Indicates variable is coded. Codes given on Code List for FOCF.
**Indicates need to obtain/verify from case folder and specify the source in the space provided.

Variable	Location	Item	Verification Source
		Card One RTC#	
R13	2.D.	Race*	-
R14	2.E.	Date Referral Process Completed	-
R15	2.F.	Months in Statuses 00-02	-
R16	2.G.	Spanish Surname*	-
R17	2.H.	Outcome of Referral Process Comment: For FO Study, Code "06" as 04 Code "10" as 05	-
		Card Two RTC#	
R18	2.I.1.	Disabling Condition-Major* Comment: Code 100 as 1000 Code 119 as 1190 "Put ICD9 code p.3"	_____
R19	2.I.2.	Disabling Condition-Secondary** If none, code "9999." "Put ICD9 code p.3"	_____
R20	2.I.3.	Disabling Condition-Third** If none, code "9999" "Put ICD9 code p.8"	_____
R21	2.J.1	Previous Closure within 36 months Outcome**	-
R22	2.J.2	Months Since Previous Closure	-
R23	2.K.	Marital Status*	-
R24	2.L.	Number Dependents Note: If not "head of household", Enter "0". See Code List.	

Variable	Location	Item	Verification Source
R25	2.M.	Total Number in Family (See Code List if Necessary)	-
R26	2.N.	Highest Grade Completed Comment: If verification source conflicts with R-300, record highest number reported	_____
R27	2.O.	Work Status at Referral*	_____
R28	2.P.	Weekly Earnings (to nearest $)	-
R29	2.Q.	Total Monthly Family Income*	_____
R30	2.R.1.	Public Assistance Type*	-
R31	2.R.2	Public Assistance Monthly Amount	-
R32	2.R.3.	Time on Public Assistance*	-
R33	2.S.	Primary Source of Support*	-
R34	2.T.	Type of Institution at Referral*	-
R35	3.A.	Date of Closure	-
R36	3.B.	Referred by Social Security Administration*	-
R37	3.C.	Social Security Claim Type* CODES: 1 DIB 3 CDB-D1 2 CDB-OA 4 DWB 9 No Trust Fund Expenditures	-
R38	3.D.	Federal Special Program Identification* (Record Sum of Codes Checked) Card Three RTC#	
	3.E.	Cost of Case Services (nearest $)	
R39		1. All Services - Total	
R40		2. Rehab. Facilities - Total	
R41		3. Soc. Security Trust Fund - Total	
R42		4. Supplimental Security IF - Total	

Variable	Location	Item	Verification Source
		Card Three RTC#	
R43	3.F.	Date Ext. Eval.Completed	-
R44	3.G.	SSDI Status*	-
R45	3.H.	SSI Status*	-
R46	3.I.	Work Status* (Closure)	-
R47	2.J.	Weekly Earnings (Closure)	-
R48	3.K.1.	Public Assistance - Type*	-
R49	3.K.2.	Public Assistance - Amount	-
R50	3.L.1.	Occupation at Closure* Title:_____	-
		DOT Code from R-300 _ _ _	
R51	3.L.2.	Occupation at Closure TVQ	-
R52	3.M.1.	No. Months in Ext. Eval. (06)	-
R53	3.M.2.	No. Months from Accept to Closure (10-24)	-
R54	3.M.3.	No. Months in Training (18)	-
		Card Four RTC#	
R55	3.M.4.	No. Months Ready or In-Employment (20-22)	-
R56	3.N.1.	Outcome of EE or VR Services*	-
R57	3.N.2.	Reason Not Rehabilitated* (enter Code if Outcome Code = 1, 3 or 4; otherwise enter "0".)	-
	3.0	Services Provided (Use code as stated on R-300)*	
R58	3.0.10	-Diagnostic	-
R59	3.0.11	-Restoration	-
R60	3.0.12	-College	

Variable	Location	Item	Verification Source
		Card Four RTC#	
R61	3.0.13	-Other Academic	-
R62	3.0.14	-Business School	-
R63	3.0.15	-Vocational School	-
R64	3.0.16	-On-the-Job	-
R65	3.0.17	-Pers. & Voc. Adjustment	-
R66	3.0.18	-Miscellaneous	-
R67	3.0.19	-Maintenance	-
R68	3.0.20	-Other Services	-
R69	3.0.21	-Services to Other Family Members	-
R70	3.P.	State Agency Special* Program Identifications	-
R71	3.Q.	District Counselor Code*	-
----------		END OF R-300----------	

II. Case File Information

C1	1.	Received SSDI (Title II)** 0 - No 1 - Yes	_____
C2	2.	Age at onset of blindness	Medical History
C3	3.	Visual Efficiency (% loss)	Certificate of Acceptability
C4.	4.	Mobility Training** (0 - None or did not need 1 - Received MT)	_____
C5	5.	Use of Aids** (See Code List) 0 - None 2 - Non-optical 1 - Optical 3 - Both	_____
C6	6.	Low Vision Aid Training** (0 - No 1 - Yes)	Medical History

Variable	Location	Item	Verification Source
	II.	Case File Information	
C7	7.	Medication/Treatment Prescribed** Codes: 00 - None 01 - for eye condition 02 - for chronic physical ailment 03 - for chronic emotionalpsychological 04 - physical plus eye 05 - emotional plus eye 06 - physical plus emotional, no eye 07 - physical plus emotional plus eye	
C8	8.	IQ Measures (WAIS-VIQ) (999 Not available) Otherwise record VIQ (or specify other IQ measure substituted)	_____
C9	9.	Achievement - WRAT Grade Level:	_____ Name of Test
C91		Spelling	
		Card Five RTC#	
C92		Arithmetic (999 - not available)	
		Attainment of Client Skill Goals	
C10	10.	Occupational Goal at First IWRP** (Status 12)	_____ Job Title DOT #_ _ _
C11	11.	Occupational Goal TVQ	
C12	12.	No. Changes in Occupational Goal (see no. of revisions of IWRP)	_____
		Employment History Source: SSI Confidential So. Sec./Dis. Det. Take 3 longest held jobs. Omit from consideration if title is not specified.	

Variable	Location	Item	Verification Source
		Attainment of Client Skill Goals	
C13	13.	Previous Occupation 1 - Most Recent**	(Job Title) - DOT # -
C14	14.	Previous Occupation 1 - TVQ	
C15	15.	Time from Previous Occupation to Referral (Months)	
C16	16.	Previous Occupation 1 time (tenths year)	
C17	17.	Previous Occupation 2 --Next most recent**	(Job Title)
C18	18.	Previous Occupation 2 Time	
C19	19.	Previous Occupation 3 - Least recent**	(Job Title) - DOT # - -
		3. - TVQ	
		Card Six RTC#	
C20	20.	Previous Occupation 3 time	
C21.	21.	Zip Code for Nearest VRTF	
C22.	22.	Proximity to Nearest VR (Mileage entered later) Training Facility	City_____
C23.	23.	Zip Code for Nearest Sheltered Employment	
C24.	24.	Proximity to Nearest Sheltered Employment	City_____
C25.	25.	Zip Code for VR Counselor	City of Counselor _____ City of Client: _____
C26.	26.	Proximity to VR Counselor	_____
C27.	27.	Unemployment Rate in County of Residence at 2 mo. prior to Closure	State Labor Statistics

Variable	Location	Item	Verification Source
		Card Six RTC#	
C28	28.	Counselor Years Experience (Nearest Years) (99 - Unavailable)	_____
C29	29.	Counselor Training**	_____

Codes: (Add 05 to each code if counselor has CRC.)

10 - High School
20 - BS or BA
30 - BS-Rehab. Services
40 - Masters
50 - Masters in related area (human services)
60 - Masters in rehab. counseling
70 - Doctorate

III. Specific Expenditures - Case Service Expenditure P/O
(Enter totals from Case Service Expenditure Worksheet to nearest Dollar. If not utilized, enter zero right justified.)

E10	1.	CSE10	Diagnostic and Evaluation Total
E21	2.	CSE21	Surgery/Treatment Total
E22	3.	CSE22	Prostheses Total
E23	4.	CSE23	Hospital/Convalescence Total
		Card Seven RTC#	
E24	5.	CSE24	Physical Restoration Other Physical Total (e.g. Laser)
E31	6.	CSE31	Academic Training College Total
E32	7.	CSE32	High School/Elementary Total
E33	8.	CSE33	Business Training Total

Variable	Location	Item	Verification Source
		Card Seven RTC#	
E34	9. CSE34		Trade School Total
E35	10. CSE35		On Job Training
E36	11. CSE36		PAT/VAT TOTAL
E37	12. CSE37		Technical Associate Degree Total
E38	13. CSE38		Miscellaneous Training Total
E40	14. CSE40		Maintenance Total
		Card Eight RTC#	
E50	15. CSE50		Service to Family Total
E90	16. CSE90		Other Services Total
E91	17. CSE91		Travel/Transportation Total
E92	18. CSE92		Reader Services Total
E93	19. CSE93		Other Total
E60	20. CSE60		Post Employment /Unspecified
E61	21. CSE61		Diagnostic/Evaluation Total
E62	22. CSE62		Rest (P&M) Total
E63	23. CSE63		Training Total
E64	24. CSE64		Guidance & Counseling Total

Variable	Location	Item	Verification Source
		Card Nine RTC#	
E65	25.	CSE65	Placement Total
E66	26.	CSE66	Maintenance Total
E67	27.	CSE67	Transportation
E69	28.	CSE69	Other Services
R72	2.I.1.5.	Disabling Condition 1 Major ICD9	
R75	2.I.2.5	Disabling Condition 2 ICD9	
R76	2.I.3.5	Disabling Condition 3 ICD9	
			Note R72, R73, R74: 0 = unknown or not applicable 1 = one eye 2 =bilateral
C30	Proximity of Employement to Home City of Employment (999 indicates missing data)		_____
C31	Occupational Goal at Last IWRP		_____ (Job Title) - - - - - - DOT #
C32	Last Occupational Goal TVVQ		
		Card Zero RTC#	
R73	1.2	Primary Disability Associated Eye Cond. 2	
R74	1.3	Primary Disability Associated Eye Cond. 3	

APPENDIX B

List of All Variables

Variable Name		Variable Label
Original	Derived	
R6		Referral Source
	R6A	Referred by Individual
	R6B	Referred by Educational Institution
	R6C	Referred by Health Facilities
	R6D	Referred by Welfare and Other
	R6E	Referred by Private Organizations
R7		Age at Referral
R9A		Gender
R11		SSDI Status
	R11A	SSDI Received at Referral
R12		SSDI Status at Referral
	R12A	SSI at Referral
R13		Race
	R13A	White/Nonwhite
R15		Months in Statuses 00-02
R16		Spanish Surname
R17		Referral Outcome - Extended Evaluation
R21		Previous Closure
	R21A	Months Since Previous Successful Closure
	R21B	Months Since Previous Unsuccessful Closure
R22		Months Since Previous Closure
R23		Marital Status
	R23A	Currently Married
R24		Number of Dependents
R25		Total Number in Family
R26		Highest Grade Completed
R27		Work Status at Referral
	R27B	Wage Earner Group at Referral
R28		Weekly Earnings at Referral
R29		Total Monthly Family Income Category at Referral
R30		Public Assistance Type at Referral
R31		Public Assistance Monthly Amount in Dollars at Referral
R32		Time on Public Assistance at Referral
R33		Primary Source of Support at Referral
	R33B	Primary Support at Referral = Family-Friend
	R33C	Primary Support at Referral = Transfer Payments
	R33D	Primary Support at Referral = Other Sources
R34		Type of Institution at Referral
R36A		Referred by Social Security Administration

R37		Social Security Claim Type
	R37A	Social Security Recipient at Referral?
R39		All Services-Total
R40		Rehabilitation Facilities-Total
R41		Social Security Trust Fund-Total
R42		Supplemental Security Income Fund-Total
R44		SSDI Status at Closure
	R44A	SSDI Received at Closure
R45		SSI Status at Closure
	R45A	SSI at Closure
R46		Work Status at Closure
	R46B	Work Status Wage Earner Group
R47		Weekly Earnings at Closure
R48		Public Assistance Type at Closure
R49		Public Assistance in Dollars at Closure
R50T2		Occupation at Closure Categories
R51		Occupation at Closure TVQ
R52		Number of Months in Extended Evaluation
R53		Number of Months from Acceptance to Closure
R54		Number of Months in Training
R55		Number of Months Ready or in Employment
R56		Outcome of Extended Evaluation or Vocational Rehabilitation Services
R57		Reason Not Rehabilitated
	R57B	Not Rehabilitated Due to Other?
	R57C	Not Rehabilitated Due to Too Severe Disability
	R57D	Not Rehabilitated Due to Death
R58		Received Diagnostic Services
R59		Received Restoration Services
R60		Received College Training
	R60A	Received Institutional Training
R61		Received Other Academic Training
R62		Received Business School Training
R63		Received Vocational School Training
R64		Received On the Job Training
	R64A	Received Non-Insitutional Training
R65		Received Personal and Vocational Adjustment Training
R66		Received Miscellaneous Training
R67		Received Maintenance
R68		Received Other Services
R69		Received Services to Other Family Members
C1		Received SSDI During Rehabilitation Process
C2		Age at Onset of Blindness
	C2A	Age at Onset Ranges
C3		Visual Efficiency Percent Loss
C4		Mobility Training
C5		Use Optical-Nonoptical Aids
	C5A	Used Optical Aid
	C5B	Used Nonoptical Aid
	C5C	Used Both Optical and Nonoptical Aids

C6		Low Vision Aid Training
C7		Medication/Treatment Prescribed
	C7A	Number of Types of Medications/ Treatments Prescribed
C8		IQ Measures
C9		Acievement WRAT Reading Level
C91		Achievement WRAT Spelling Level
C92		Achievement WRAT Arithmetic Level
C10T2		Occupational Goal TVA at First IWRP Category
C11		Occupational Goal TVQ
C12		Number of Changes in Occupational Goal
C13T2		Previous Occupation Most Recent Category
C14		Previous Occupation 1 TVQ
C15		Time from Previous Occupation to Referral
C16		Previous Occupation First Time
C171		Previous Occupation 2 TVQ
C17T2		Previous Occupation Next Most Recent Category
C18		Previous Occupation Second Time
C19T2		Previous Occupation Least Recent Category
C191		Previous Occupation 3 TVQ
C20		Previous Occupation Third Time
C22		Proximity to Nearest Vocational Rehabilitation Training Facility (miles)
	C22A	Proximity to Vocational Rehabilitation Counselor Range
C24		Proximity to Nearest Sheltered Employment
	C24A	Proximity to Sheltered Employment Ranges
C26		Proximity to VR Counselor (miles)
	C26A	Proximity to Counselor-Range
C27		Unemployment Rate in County of Residence 2 Months Prior to Closure
C28		Counselor of Closure Years of Experience
C29		Counselor Training Index
E10		Expenditure for Diagnostic Evaluation
E21		Expenditure for Surgery/Treatment
	E21A	Expenditure Sum of Surgery/ Treatment Plus Other Physical Restoration
E22		Expenditure for Prostheses
E23		Expenditure for Hospital/Convalescence
E24		Expenditure for Physical Restoration - Other Physical
E31		Expenditure for Academic Training College
	E31A	Expenditure Sum of Instruction and Training (E31 + E32 + E33 + E34 + E37)
E32		Expenditure for High School/Elementary School
E33		Expenditure for Business Training
E34		Expenditure for Trade School
E35		Expenditure for On-the-Job Training

E35A	Expenditure for On-the-Job Training and Miscellaneous Training
E36	Expenditures for PAT/VAT
E37	Expenditure for Technical Associate Degree
E38	Expenditure for Miscellaneous Training
E40	Expenditure for Maintenance
E50	Expenditure for Service to Family
E90	Expenditure for Other Services
E91	Expenditure for Travel/Transportation
E92	Expenditure for Reader Services
E93	Other Expenditures Total
R72A	First Eye Disorder Categories-ICD9
R73A	Second Eye Disorder Cateogries-ICD9
R74A	Third Eye Disorder Categories-ICD9
C30	Proximity of Employment to Home
C31T2	Occupation Goal Last IWRP Category
C32	Occupational Goal Last TVQ
NOCC	Number of Occupations Held Prior to Referral
NDIS	Number of Additional Disabilities to Blindness
NEDIS	Number of Eye Disabilities
TOTDIS	Total Number of Disabilities
YDPR	Years Disabled Prior to Referral
IPE	Index of Previous Employment

APPENDIX C

SUMMARY OF THE STEP-WISE DISCRIMINATE ANALYSES

STEP	ACTION ENTERED	ACTION REMOVED	VARS IN	WILKS' LAMBDA	SIG.	LABEL
1	C2		1	.751696	.0000	Age at Onset of Blindness
2	C11		2	.658809	.0000	Occupational Goal TVQ
3	E36		3	.618832	.0000	Expenditure for PAT/VAT
4	R9A		4	.588837	.0000	Gender
5	R33D		5	.567703	.0000	Primary Support at Referral: Other Sources
6	R26		6	.551384	.0000	Highest Grade Completed
7	C26		7	.536133	.0000	Proximity to VR Counselor (miles)
8	R64A		8	.523513	.0000	Received Non-Institutional Training
9	R60A		9	.510802	.0000	Received Institutional Training
10	R59		10	.499458	.0000	Received Restoration Services
11	NDIS		11	.490195	.0000	Number of Additional Disabilities to Blindness
12	E23		12	.482031	.0000	Expenditure for Hospital/ Convalescence
13	R67		13	.474204	.0000	Received Maintenance
14	C1		14	.466840	.0000	Received SSDI During Service
15	NOCC		15	.459126	.0000	Number of Occupations
16	C15		16	.452035	.0000	Time from Previous Occupation to Referral
17	C16		17	.445096	.0000	Previous Occupation First Time
18	R13A		18	.438004	.0000	White/Non-White
19	C24		19	.431628	.0000	Proximity to Nearest Sheltered Employment
20	R23A		20	.425660	.0000	Currently Married
21	R6D		21	.420085	.0000	Referred by Welfare and Other
22	R32		22	.414492	.0000	Time on Public Assistance at Referral
23	C4		23	.408608	.0000	Mobility Training
24	E34		24	.403598	.0000	Expenditure for Trade School
25	E90		25	.398467	.0000	Expenditure for Other Services
26	C27		26	.393876	.0000	Unemployment Rate in County of Residence 2 Months Prior to Closure
27	R36A		27	.389620	.0000	Referred by Social Security Administration
28	R21B		28	.385434	.0000	Months Since Previous Unsuccessful Closure
29	E10		29	.381635	.0000	Total Expenditure for Diagnostic Evaluation
30	R6E		30	.377900	.0000	Referred by Private Organizations
31	C6		31	.374106	.0000	Low Vision Aid Training
32	R31		32	.370548	.0000	Public Assistance Monthly Amount in Dollars at Referral
33	E32		33	.367296	.0000	Expenditure for High School/ Elementary School
34	R54		34	.363853	.0000	Number of Months in Training

35	R53	35	.360276	.0000	Number of Months from Acceptance to Closure
36	R55	36	.356426	.0000	Number of Months Ready or in Employment
37	NDIS	35	.358108	.0000	Number of Disabilities in Addition to Blindness
38	E31A	36	.354346	.0000	Expenditure Sum of Instruction and Training (E31 + E32 + E33 + E34 + E37)
39	E33	37	.351356	.0000	Expenditure for Business Training
40	R42	38	.345861	.0000	Supplemental Security Income Fund-Total
41	E38	39	.343054	.0000	Expenditure for Miscellaneous Training
42	R16	40	.340137	.0000	Spanish Surname
43	C3	41	.337266	.0000	Visual Efficiency Percent Loss
44	C5B	42	.334438	.0000	Used Nonoptical Aid
45	R58	43	.331374	.0000	Received Diasnostic Services
46	C12	44	.328660	.0000	Number of Changes in Occupational Goal
47	R40	45	.325430	.0000	Rehabilitation Facilities-Total
48	E91	46	.322792	.0000	Expenditure for Travel/ Transportation
49	E21A	47	.320111	.0000	Expenditure Sum of Surgery/Treatment Plus Other Physical Restoration
50	C7A	48	.317727	.0000	Number of Types of Medications/ Treatments Prescribed
51	E35	49	.315223	.0000	Expenditure for On-the-job Training
52	R39	50	.311871	.0000	All Services-Total
53	R69	51	.309636	.0000	Received Services to Other Family Members
54	NDIS	52	.307873	.0000	Number of Additional Disabilities to Blindness
55	E93	53	.305929	.0000	Other Expenditures Total
56	C6	52	.307558	.0000	Low Vision Aid Training
57	E23	51	.309196	.0000	Expenditure for Hospital/ Convalescence
58	R12A	52	.307461	.0000	SSI at Referral

APPENDIX D

COMPLETE LISTING OF DISCRIMINATING VARIABLES
IN ORDER OF IMPORTANCE SHOWING MEANS
FOR WAGE EARNER CATEGORIES

Variable	F-Ratio	Wage Earner Group Number			
1. C2	63.1	2	1	4	3
Age at Onset of Blindness		16.2	19.2	28.1	46.7
2. C11	41.4	3	2	4	1
Occupational Goal TVQ		50.5	51.0	55.6	61.2
3. E36	15.1	1	3	4	3
Expenditure for PAT/VAT		587	703	904	2746
4. R9A	19.4	1	4	2	3
Gender		.406	.420	.460	.730
5. R33D	11.9	3	4	2	1
Primary Support at Referral: Other Sources		.054	.100	.111	.243
6. R26	14.9	2	3	4	1
Highest Grade Completed		8.17	9.58	10.5	11.2
7. C26	5.66	4	2	3	1
Proximity to VR Counselor		13	18.1	21.1	21.2
8. R64A	6.10	4	3	1	2
Received Non-Institutional Training		.260	.348	.391	.556
9. R60A	26.4	3	2	4	1
Received Institutional Training		.029	.079	.213	.337

Variable	F-Ratio	Wage Earner Group Number			
10.R59	7.13	4	2	1	3
Received Restoration		.347	.365	.480	.574
11.NDIS	23.5	1	2	4	3
Number of Additional Disabilities		.738	1.10	1.24	1.38
12.E23 Expenditure for Hospital/ Convalescence	3.11*	2	4	1	3
		45	78.9	192	195
13.R67	11.95	3	4	2	1
Received Maintenance		.132	.273	.362	.376
14.C1	2.17*	1	2	3	4
Received SSDI During Service		.312	.333	.378	.440
15.NOCC	2.05*	2	4	3	1
Number of Occupations		1.38	1.44	1.61	1.63
16.C15	11.8	1	2	4	3
Time From Previous Occupation To Referral		8.54	22.9	26.6	43.2
17.C16	31.5	1	2	4	3
Previous Occupation First Time		9.34	9.36	12.3	20.9
18.R13A	3.70	2	4	3	1
White/Non-White		.556	.720	.735	.767
19.C24	4.43	2	3	4	1
Proximity to Nearest Sheltered Employment		21.4	43.5	45.2	50.2
20.R23A	8.59	2	1	4	3
Currently Married		.270	.297	.320	.505

Variable	F-Ratio	Wage Earner Group Number			
21.R6D	2.96*	2	1	4	3
Referred by Welfare and Other		.206	.208	.253	.328
22.R32	2.44*	3	1	4	2
Time on Public Assistance at Referral		.702	.751	.108	1.20
23.C4	2.76*	1	3	4	2
Mobility Training		.302	.412	.420	.444
24.E34	3.15*	2	3	4	1
Expenditure for Trade School		.000	.000	27.9	57.7
25.E90	5.17	3	4	2	1
Expenditure for Other Services		6.82	76.7	132	353
26.C27	3.17	4	1	3	2
Unemployed Rate in County of Residence 2 Months Prior to Closure		5.84	6.14	6.36	6.63
27.R36A	.703*	1	4	3	2
Referred by Social Security Administration		.831	.853	.858	.905
28.R218	1.96*	3	1	4	2
Months Since Previous Unsuccessful Closure		.059	.124	.133	.556
29.E10	4.35*	3	1	4	2
Total Expenditure for Diagnostic Evaluation		135	179	439	449
30.R6E	3.31	1	4	2	3
Referred by Private Organizations		.005	.020	.048	.054

Variable	F-Ratio	Wage Earner Group Number			
31.C6 Low Vision Aid Training	3.93	4	3	2	1
		.127	.167	.175	.262
32.R31 Public Assistance Monthly Amount at Referral	3.39	3	1	2	4
		22.6	37.9	40.7	48.4
33.E32 Expenditure for High School/ Elementary School	1.42*	2	3	1	4
		.000	.000	2.24	54.6
34.R54 Number of Months in Training	13.5	3	4	2	1
		3.78	10.7	12.4	13.7
35.R53 Number of Months from Acceptance to Closure	9.42	3	2	4	1
		13.9	22.1	24.1	24.5
36.R55 Number of Months Ready or in Employment	5.27	4	3	2	1
		2.38	2.50	3.68	4.26
38.E31A Expenditure Sum of Instruction and Training (E31 + E32 + E33 + E34 + E37)	13.8	3	2	4	1
		12.6	75.6	294.2	820.2
39.E33 Expenditure for Business Training	1.07*	4	3	2	1
		.000	5.06	12.5	14.3
40.R42 Supplemental Security Income Fund Total	.595*	3	2	1	4
		266.8	328.4	466.0	571.6
41.E38 Expenditure for Miscellaneous Training	4.08*	2	3	4	1
		1.52	6.91	13.0	53.5
42.R16 Spanish Surname	1.92*	3	2	4	1
		.015	.032	.040	.060

Variable	F-Ratio	Wage Earner Group Number			
43.C3 Visual Efficiency Percent Loss	3.10*	3	1	4	2
		92.8	92.9	94.4	94.4
44.C5B Used Nonoptical Aid?	1.17*	2	1	4	3
		.111	.123	.140	.181
45.R58 Received Diagnostic Services	3.01	4	1	2	3
		.913	.945	.968	.980
46.C12 Number of Changes in Occupational Goal	10.3	3	4	2	1
		.196	.447	.651	.718
47.R4C Rehabilitation Facilities Total	5.21	1	3	4	2
		767.0	788.1	889.0	2055.2
48.E91 Expenditure for Travel/Transportation	2.88	3	4	1	2
		25.0	67.7	73.0	118.7
49.E21A Expenditure Sum of Surgery/Treatment Plus Other Physical Restoration	5.39	2	4	1	3
		33.7	113.1	218.1	255.9
50.C7A Number of Types of Medications/ Treatments	9.81	1	4	2	3
		.455	.566	.682	.853
51.E35 Expenditure for On-the-Job-Training	1.95*	3	1	4	2
		28.9	98.5	138.5	198.5
52.R39 All Services Total	7.87	3	4	1	2
		1550.2	2841.9	3249.0	3632.3
53.R69 Received Service to Other Family Members	1.06*	2	3	4	1
		.032	.034	.047	.069